Professor Dr P. Hennipman Lectures in Economics, 1982
delivered at the University of Amsterdam

COMMODITIES AND CAPABILITIES

AMARTYA SEN

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In loving memory of Eva

FOREWORD

Amartya Sen is Drummond Professor of Political Economy at Oxford University and Fellow of All Souls College. He has been Professor of Economics at the London School of Economics, Jadavpur University, Calcutta and Delhi University, as well as Visiting Professor at the Massachusetts Institute of Technology, the University of California at Berkeley, Stanford University and Harvard University.

He has published widely in the fields of social choice theory, welfare economics, development economics, income distribution, public choice and philosophy. His previous books include: *Choice of Techniques* (1960), *Collective Choice and Social Welfare* (1970), *On Economic Inequality* (1973), *Employment, Technology and Development* (1975), *Poverty and Famines* (1981), *Choice, Welfare and Measurement* (1982) and *Resources, Values and Development* (1984).

On April 22, 1982, Professor Sen delivered the third Hennipman Lecture, continuing the distinguished tradition of clarifying the methodology of economics to which Hennipman's lifelong work has been dedicated. The Hennipman Foundation is grateful to Professor Sen for expanding that lecture into the present volume, in which he continues his innovative exploration of the conceptual foundations of welfare

D. J Wolfson

PREFACE

This is a short monograph based on my Hennipman Lecture at the University of Amsterdam in April 1982. The main purpose of this tiny book is to present a set of interrelated theses concerning the foundations of welfare economics, and in particular about the assessment of personal well-being and advantage. I argue in favour of focusing on the capability to function, i.e., what a person can *do* or can *be*, and argue against the more standard concentration on *opulence* (as in 'real income' estimates) or on *utility* (as in traditional 'welfare economic' formulations). Insofar as opulence and utility have roles (and they certainly do), these can be seen in terms of their indirect connections with well-being and advantage, in particular, (1) the *causal* importance of opulence, and (2) the *evidential* importance of utility (in its various forms, such as happiness, desire-fulfilment and choice).

The two appendices present some empirical material illustrating the approach. Appendix A deals with some international comparisons. Appendix B is concerned with examining sex bias in the Indian economy (in terms of well-being and advantage of women vis-a-vis men). The latter study draws extensively on some joint work I have done with Jocelyn Kynch at the Oxford Institute of Economics and Statistics, supported by the Leverhulme Trust. I am grateful to the Institute, the Trust, and to Jocelyn Kynch, and I am also indebted to Caroline Wise for typing the manuscript and for keeping track of the various bits and pieces I wrote in connection with the Hennipman Lecture in the long period that has elapsed since April 1982. I have also had useful comments from, and discussion with, Sudhir Anand, Joji Asahi, John Broome, David Collard, Luca d'Agliano, Ronald Dworkin, Dieter Helm, Ravi Kanbur, James Mirrlees, John Muellbauer, Derek Parfit, Ian White and Bernard Williams, and also from several participants in the discussion following my Hennipman Lecture in Amsterdam in April 1982.

Finally, I would like to thank the Hennipman Foundation for the honour they did me by the invitation to give the 1982 Hennipman Lecture (I have, of course, the greatest admiration for Professor Hennipman and his works), and also for the firm (but friendly) pressure they have put on me to finish the monograph. So here it is.

30 November 1984 *Amartya Sen*

CONTENTS

I
INTEREST, WELL-BEING AND ADVANTAGE

Much of economics is concerned with the relation between commodities and people. It investigates how people arrange to make commodities, how they establish command over commodities, what they do with commodities and what they get out of commodities The determination of whether 'the nation will be better or worse supplied with all the necessaries and conveniences for which it has occasion' was the starting point of Adam Smith's inquiry into political economy.[1] That question (and related ones about goods and people) are ever-present—explicitly or by implication—in economic analysis.

Closely related to this basic concern of economics is the question as to how a person's interests may be judged and his or her personal 'state' assessed There are many different approaches to understanding a person's interests and to judging whether the person is doing well Various different, though related, questions can be asked: Is he well off? Is she happy? Does he feel fulfilled? Does she have much freedom? Can he get what he wants? Can she do what she would like to do? Is society being good to him? Is she having a good life? These distinct questions have their own peculiar relevance in particular contexts and each has an importance of its own.

It is fair to say that formal economics has not been very interested in the plurality of focus in judging a person's states and interests In fact, often enough the very richness of the subject matter has been seen as an embarrassment. There is a powerful tradition in economic analysis that tries to eschew the distinctions and make do with one simple measure of a person's interest and its fulfilment. That measure is often called 'utility'.

The term utility does, of course, have meanings of its own, defined by utilitarians It was used quite rigorously by utilitarian economists such as Edgeworth, Marshall, Pigou, Ramsey and Robertson. This took the form of seeing utility as *satisfaction* or *happiness* (in line

[1] Adam Smith (1776, Vol 1, p 1)

with classical utilitarianism[2]), or as *desire-fulfilment* (in line with much of modern utilitarianism[3]).[4] But in much of modern economics 'utility' serves other purposes too, standing for whatever the person maximizes (or can be seen as maximizing), or simply for the person's well-being or advantage no matter how that is judged This loose usage has had a confounding influence on economic analysis Mathematical exactness of formulation has proceeded hand in hand with remarkable inexactness of content.)

I have tried to discuss these issues elsewhere,[5] and therefore need not here go into this particular question in detail. It is, however, worth emphasizing that the difficulty does *not* lie in defining 'utility' as something *other than* 'happiness' or 'desire-fulfilment'—the traditional meanings of utility. So long as one makes one's usage clear, there is nothing especially wrong—other than possible inconvenience—in defining 'utility' as one likes The real problem lies, partly, in trying to transfer the established and defended concern with 'utility' in the traditional sense to a similar concern—unestablished and undefended—with the newly-defined 'utility'. Further, there is a serious difficulty in giving several distinct meanings to utility at the same time, and thereby making the *implicit* empirical assumption that they would in reality coincide with each other.

For example, one's view of one's own welfare and the maximand in choice behaviour may each respectively be called 'utility' without great difficulty, but if *both* are called 'utility' and treated as the same, then it would have been implicitly presumed that what one

[2] Bentham (1789) provided the classic statement of this classical position

[3] See, for example, Hare (1981) See also Sidgwick (1874) See Gosling (1969) for an illuminating analysis of the distinction and the respective relevances of 'pleasure' and 'desire'

[4] Utilitarian *economists* have traditionally taken the 'satisfaction' view of utiltiy, and have often claimed empirically that this interpretation would tend to coincide with the interpretation in terms of 'intensity of desire'—what Pigou (1952) called 'desiredness' As Pigou (1952, p 24) put it 'It is fair to suppose that most commodities, especially those of wide consumption that are required, as articles of food and clothing are, for direct personal use, will be wanted as a means to satisfaction, and will, consequently, be desired with intensities proportional to the satisfactions they are expected to yield ' Frank Ramsey (1926) was, however, skeptical of this congruence, and emphasized the greater relevance of the 'desire' interpretation of utility 'The theory I propose to adopt is that we seek things which we want, which may be our own or other people's pleasure, or anything else whatever, and our actions are such as we think most likely to realize these goods ' (p 75)

[5] Sen (1982a, especially essays 2–4 and introduction)

always maximizes is indeed one's own welfare. This bemusing use of utility fits in well with a good deal of modern economic theory which, it can be argued, is disposed to regard human beings as 'rational fools',[6] who are unable to distinguish between perfectly distinguishable questions about one's happiness, one's desires, one's view of one's own welfare, one's motivation, one's maximand in choice behaviour, and so on.

It is not my purpose to argue that simplification can never be justified Economics—indeed any empirical discipline—would be impossible if simplifications were to be ruled out. The point concerns the need to recognize distinctions which are important for the purpose of the study at hand. What is objectionable in the economic theorizing that identifies widely different concepts of self-interest, motivations, etc., is not the fact of simplification itself, but the particular simplification chosen, which has the effect of taking a very narrow view of human beings (and their feelings, ideas and actions), thereby significantly impoverishing the scope and reach of economic theory.

In this monograph a person's motivations behind choice will be treated as a parametric variable which may or may not coincide with the pursuit of self-interest But the focus of this monograph is not on actions or behaviour as such, but on judging a person's interest, even though the two issues—actions and interest—are obviously related to each other.

I would distinguish broadly between two ways of seeing a person's interests and their fulfilment, and I shall call them respectively 'well-being' and 'advantage' 'Well-being' is concerned with a person's achievement. how 'well' is his or her 'being'? 'Advantage' refers to the real opportunities that the person has, especially compared with others The opportunities are not judged only by the results achieved, and therefore not just by the level of well-being achieved. It is possible for a person to have genuine advantage *and* still to 'muff' them. *Or* to sacrifice one's own well-being for other goals, and not to make full use of one's freedom to achieve a high level of well-being. The notion of advantage deals with a person's real opportunities compared with others. The freedom to achieve well-being is closer to the notion of advantage than well-being itself [7]

[6] For a critique, see Sen (1973b, 1977a) See also Hirsch (1976) Hirschman (1982, 1984), Margolis (1982), Akerlof (1983) and Basu (1984), among other contributions

[7] In my Dewey Lectures at Columbia University, given in September 1984 [see Sen (1985a)], the notion of 'well-being freedom' is analysed and distinguished both from 'well-being' (an achievement rather than a freedom) and from 'agency freedom'

It is important to be careful, in this context, not to define 'opportunity' in the limited way in which it is often defined, e.g , whether the doors of a school are formally open to John (and not whether John can financially afford to go through those doors), or—going further—whether John can attend a certain school (but not whether John has the real opportunity of using the facilities there, given his physical or mental handicap). A more plausible view of advantage has to be sought (Advantage may well be seen as a 'freedom' type notion, but the concept of freedom has to be even-handed. The question has to be further pursued later on in this monograph (Chapters 4–7).

Under each of the two headings—well-being and advantage—there are many possible approaches For example, the various interpretations of utility can be seen as different ways of representing well-being (and they have indeed been seen in these ways) But there are other, quite different, approaches to well-being as well, e g., opulence, or the fulfilment of basic needs. I shall scrutinize these different approaches to well-being, and shall also suggest an alternative Similar exercises of comparison, contrast, scrutiny and assessment have also to be done for the notion of advantage.

The judgment of interest is a problem of very wide relevance to economics It is, of course, central to welfare economics It is also crucial for a theory of poverty, for assessment of inequality, for judging economic development and for measuring standards of living It is inescapable if one is to analyse discrimination, e g , racial disadvantage or sex bias It is essential for a descriptive theory of real income comparison as well as for a prescriptive theory of public policy.[8]

Given the variety of contexts in which the assessment of interest is relevant, it is quite unlikely that we shall get some *one* measure of interest that is superior to all others and applicable in all contexts. The purpose of this monograph is not the search for such a magic measure It is more to clarify the roles and limitations of different concepts of interest, and to fill in what may well be important gaps in the conceptual apparatus of interest-assessment and the judgment

(freedom judged in terms of chosen objectives—possibly different from personal well-being)

[8] See, for example, Kolm (1969), Tinbergen (1970), Pen (1971), Osmani (1982), Atkinson (1983), Lindbeck (1983), and Jorgenson and Slesnick (1984a)

of advantage and well-being [9] Given the large number of practical problems in the context of which these questions arise, the investigation is not of theoretical interest only, but also of some real practical import.

[9] I have addressed some of these issues briefly in Sen (1982a, pp 29–31) and in Sen (1980b, 1984a)

II
COMMODITIES AND THEIR USE

In an approach pioneered by Gorman (1956) and Lancaster (1966), commodities are seen in terms of their characteristics. The characteristics are the various desirable properties of the commodities in question. Securing amounts of these commodities gives the person command over the corresponding characteristics For example, the possession of food gives the owner access to the properties of the food, which can be used to satisfy hunger, to yield nutrition, to give eating pleasure and to provide support for social meetings [1]

However, the characteristics of the goods do not tell us what the person will be able to do with those properties For example, if a person has a parasitic disease that makes the absorption of nutrients difficult, then that person may suffer from undernourishment even though he may consume the same amount of food as another person for whom that food is more than adequate.[2] In judging the well-being of the person, it would be premature to limit the analysis to the characteristics of goods possessed. We have to consider the 'functionings' of persons. While the ownership of commodities is a personal matter,[3] and thus the command over the characteristics of goods owned is also a personal matter, the quantification of characteristics does not vary with the personal features of the individual possessing the goods A bicycle is treated as having the characteristic of 'transportation', and this is the case whether or not the particular person happening to possess the bike is able-bodied or crippled In getting an idea of the well-being of the person, we clearly have to move on to 'functionings', to wit, what the person succeeds in *doing* with the commodities and characteristics at his or her command. For example,

[1] Scitovsky (1976), and Douglas and Isherwood (1979) have argued for taking a wider view of the use we make of goods than is found in mainline theory See also Chipman, Richter and Sonnenschein (1971), Lancaster (1971), Gorman (1976), and Deaton and Muellbauer (1980)

[2] See Scrimshaw (1977) For the relevance of such variations in the perception of distributive justice, see Yaari and Bar-Hillel (1984, pp 8–12)

[3] There are, of course, cases also of joint ownership and even of social ownership In the case of such jointness, and also when the ownership is not joint but the *use* is meant to be (as with a family), there is a further problem of internal division of commodities commanded by the multiple-member unit See Appendix B

we must take note that a disabled person may not be able to do many things an able-bodied individual can, with the same bundle of commodities.

A functioning is an achievement of a person: what he or she manages to do or to be. It reflects, as it were, a part of the 'state' of that person It has to be distinguished from the commodities which are used to achieve those functionings. For example, bicycling has to be distinguished from possessing a bike. It has to be distinguished also from the happiness generated by the functioning, for example, actually cycling around must not be identified with the pleasure obtained from that act. A functioning is thus different both from (1) having goods (and the corresponding characteristics), to which it is posterior, and (2) having utility (in the form of happiness resulting from that functioning), to which it is, in an important way, prior

A little notation and specification might help Consider

x_i = the vector of commodities possessed by person i,

$c(\ )$ the function (not necessarily linear) converting a commodity vector into a vector of characteristics of those commodities,

$f_i(\ )$ = a personal 'utilization function' of i reflecting one pattern of use of commodities that i can actually make (in generating a functioning vector out of a characteristic vector of commodities possessed),

F_i = the set of 'utilization functions' f_i, any one of which person i can in fact choose, and

$h_i(\ )$ = the happiness function of person i related to the functionings achieved by i [4]

If the person chooses the utilization function $f_i(\ )$, then with his or her commodity vector x_i, the achieved functions will be given by the vector b_i,

$$b_i = f_i(c(x_i)). \tag{2 1}$$

The happiness that he will then enjoy is given by u_i,

$$u_i = h_i(f_i(c(x_i))). \tag{2 2}$$

[4] Here happiness is taken to be related to functionings only It is easy to redefine it with other arguments as well, e g , reflecting (say) the joys (if any) from possession Note also that the functioning vector b_i may not depend only on the characteristics of the commodities possessed by the person himself (as assumed in equation 2 1), but may be influenced also by the functionings of others (e g , illness may spread from one person from one person to another), public health and medical programmes, and so on

The vector b_i can be thought to be the person's *being* (e g , whether well-nourished, well-clothed, mobile, taking part in the life of the community) 'Well-being', then, can plausibly be seen as an evaluation of this b_i, indicating the kind of being he or she is achieving

The exercise of evaluating b_i can be thought to be one of ranking the set of b_i, and when the ranking is complete (and does not have pathological properties that rule out numerical representation),[5] the evaluation exercise will take the form of attaching a scalar value to each b_i representing how good is that set of functionings—that particular achievement of doings and beings.

While $h_i(\ )$ is also a scalar-valued function (and u_i is a real number), we should not fall into the trap of assuming that the evaluation of how good b_i is (i e , how high the 'well-being' happens to be) must be given by the corresponding u_i. The function h_i just tells us how happy the person is with the functioning vector b_i, and it does not tell us how good that way of living is, or even how good person i himself thinks it is Whether or not happiness is a plausible criterion of the goodness of a life (a question that will be discussed in Chapter 3), *valuing* a life and measuring the *happiness* generated in that life are two different exercises. Even if it were to be maintained that happiness is the *only* criterion of goodness (a position which I would dispute but, for the moment, accept for the sake of argument), even then the two will not be the same definitionally but by virtue of a particular criterion of valuation 'I value only happiness' is a *substantive* claim (a highly disputable one, but that is another matter) and is not a tautology or a logical truth

If $v_i(\ )$ is the valuation function of person i, then the value of that vector of functionings b_i is given by

$$v_i = v_i(f_i(c(x_i))) \qquad (2\ 3)$$

So far the attention has been concentrated only on one utilization function $f_i(\ )$ from the set F_i. For a given commodity vector x_i, the functioning vectors feasible for the person are given by the set $P_i(x_i)$,

$$P_i(x_i) = [b_i \mid b_i = f_i(c(x_i)), \text{ for some } f_i(\ ) \in F_i]. \qquad (2.4)$$

[5] See Debreu (1959, ch 4) For example, a lexicographic ordering over the unit square does not have a real-numbered representation

If the person's choice of commodity vectors is restricted to set X_i, then the person's feasible functioning vectors are given by the set $Q_i(X_i)$,

$$Q_i(X_i) = [b_i \mid b_i = f_i(c(x_i)), \text{ for some } f_i(\ ) \in F_i \text{ and for some } x_i \in X_i] \quad (2.5)$$

$Q_i(X_i)$ represents the freedom that a person has in terms of the choice of functionings, given his personal features F_i (conversion of characteristics into functionings) and his command over commodities X_i ('entitlements')[6] Q_i can be called the 'capabilities' of person i given those parameters. It reflects the various combinations of functionings ('beings') he can achieve.

Given the valuation function $v_i(\cdot)$, it is of course possible to characterise the values of well-being that he can possibly achieve, given by the set V_i,

$$V_i = [v_i \mid v_i = v_i(b_i), \text{ for some } b_i \text{ in } Q_i] \quad (2.6)$$

It must not be taken for granted that the highest value of v_i in V_i will necessarily be chosen (when such a maximum exists), since maximizing one's own well-being may not be the only motive for choice Given other possible objectives and possible 'deontological' requirements (related, say, to one's obligations to others), it is quite possible that a non-v_i-maximal b_i may in fact be chosen. This will introduce an additional problem in the evaluation of a person's capabilities

There is the further problem that in judging a 'freedom' type notion (as the concept of capabilities is), it is not altogether easy to identify the value of the set Q_i with the value of its highest-valued element (even when that element can and will be chosen) Consider a person having a capability set Q_i of which b_i^* is the unique maximal element (in terms of v_i), and assume first that b_i^* is in fact chosen, yielding well-being $v_i(b_i^*)$. Now assume that all b_i-vectors other than b_i^* become non-feasible (through a fall in entitlement X_i or in utilization F_i). But b_i^* is still achievable and $v_i(\ )$ is unchanged The person's well-being will remain unaffected,[7] viz., $v_i(b_i^*)$, but it is not easy to claim that his 'freedom' is unchanged. In an important sense he can do less than he could do before, even though the best he can do is quite unchanged These difficult issues will have to be discussed

[6] See Sen (1981a)

[7] Unless being able to choose is an important functioning and itself affects the person's well-being This issue is taken up in Chapter 7

when problems of evaluation of well-being and capabilities respectively are taken up in Chapters 4–7

I end this preliminary discussion with three further remarks First, if it is thought that being happy is a relevant functioning—a valuable *aspect* of being—then it will be sensible to include a measure of happiness in the vector of functioning f_i In that case the function $h_i(\cdot)$ defined in (2 2) will take the form of picking one particular component of the vector $b_i = f_i(c(x_i))$

Second, as Gary Becker (1976, p 92) has rightly pointed out, 'in recent years economists increasingly recognise that a household is truly a "small factory" [Cairncross (1958)]: it combines capital goods, raw materials and labour to clean, feed, procreate and otherwise produce useful commodities'. It may indeed be illuminating up to a point to see functionings as 'commodities' produced by the household, but this analogy can also be misleading since functionings are features of the state of existence of a person, and not detached objects that the person or the household happens to 'produce' and 'own' Living long, or being free from malaria, or not being 'ashamed to appear in public',[8] can be seen as commodities only in a very limited sense, and a formal structure based on that sense need not be particularly helpful for our purpose The questions suggested by the analogy may also not be always especially appropriate (e.g., what is 'the time required to produce a unit of that commodity'[9]). Also, many of the functionings (e.g , being free from malaria) are 'produced' at least as much outside the household as inside it (e g , through anti-epidemic public policy) [10]

Third, it is important to emphasize that the valuation function $v_i(\ )$ can quite easily be a partial ordering that is substantially incomplete. There is no general presumption that it is always possible to rank the values of two types of living vis-a-vis each other The choice is not an all or nothing one, and it is quite possible that a person may be able to rank one functioning vector over another

[8] Adam Smith (1776, pp 351–352) Adam Smith is here discussing the varying requirements of clothing, etc , depending on social customs, for the same achievement of functioning (of being unashamed to appear in public) On this see Sen (1983e)

[9] Becker (1976, p 6)

[10] Although Becker's formal system of household production functions is not very helpful for our purpose, this is not meant as a criticism of that approach since his own motivations for developing it are quite different (and the assessment of that system need not concern us here)

without being able to rank every pair of such vectors.

The insistence on completeness is quite illegitimate in many other economic problems as well, and it often makes a great deal more sense to accept the less ambitious structure of partial orderings than to insist on arbitrarily completing all partial orders.[11] It can be argued with some force that both well-being and advantage may well fit the partial odering format more naturally than the more exacting requirements of complete orders.

[11] Sen (1970a, b) See also the discussion of 'plural utility' in Sen (1980a)

III
UTILITY, DESIRE AND HAPPINESS

It was mentioned in Chapter 1 that the term 'utility' is often used to mean quite different things, and there is a new—but by now widely used—tradition by which anything of value is called by that versatile name. But the careful utilitarian thinker does indeed use the term in more precise ways. Nevertheless, even *within* the utilitarian tradition, there are several distinct meanings associated with 'utility', and there is an extensive literature on the respective claims of the 'happiness' (or 'pleasure') view of utility on the one hand, and the 'desire-fulfilment' view on the other.[1]

A plausible case can indeed be made for taking either happiness, or desire-fulfilment, or indeed both, seriously enough as guides to a person's well-being. It would be odd to claim that a person broken down by pain and misery is doing very well, and no less peculiar to think of a person whose desires are systematically violated as achieving a high level of well-being The issue is not whether either of these views have some plausibility—they both clearly do. The real question is whether either happiness or desire-fulfilment provide an adequate approach to well-being in general, and not just in rather special cases (in terms of which the illustrations of their relevance very often run).

I shall take up this difficult question presently, but before that I would like to consider briefly an altogether different approach to utility which has acquired some prominence in the modern economic literature. This concerns the view of utility as nothing other than the real-valued (i e , numerical) representation of *choice* [2] If a person's 'choice function' (specifying choices from each feasible set) has certain characteristics of internal consistency (essentially, a combination of

[1] The happiness view goes back, of course, to Bentham (1789) and has been extensively used in economics by such authors as Edgeworth (1881), Marshall (1890) and Pigou (1920) The desire-based approach has been developed in various forms by, among others, Sidgwick (1874), Ramsey (1926), Harsanyi (1976), Hare (1981) and Mirrlees (1982) Some of the issues involved in the conflict between the two approaches have been examined by Gosling (1969), Brandt (1979), Sen (1980a) and J Griffin (1982, 1984)

[2] Cf Hicks (1939,1981), using a prior (pre-choice) notion of utility

'contraction' and 'expansion' consistency[3]), then the person's choice function can be represented by one binary relation and all the choices can be seen as maximization according to that binary relation. That binary relation is frequently seen as 'utility' in the modern economic literature, following an approach that goes back at least to the origin of the 'revealed preference' school [Samuelson (1938)]

As an approach this begs more questions than it can answer Whether the binary relation of choice can possibly be seen as reflecting the person's well-being must depend on the motivations that underlie choice [4] There is an enormous difference between choosing tea or coffee according to one's taste (and concern for personal well-being), and choosing to join, or not to join, a strike, taking note, *inter alia*, of obligations to others, or working hard or giving to charity out of sympathy or commitment [5] To assume that the binary relation underlying choice (if the choice is consistent enough to yield such a binary representation) must be the person's ordering of own *well-being*, is an heroic simplification [6] It is also the case, as it happens, that the choice-approach to well-being starts one off on the wrong foot altogether on the subject of *interpersonal* comparisons of well-being, since people do not actually face the choice of being someone else or living at another age or time [7] An approach that cannot easily accommodate interpersonal comparisons is seriously handicapped in substantiating the notion of well-being.[8]

[3] See Sen (1971) and Herzberger (1973) See also Houthakker (1950), Arrow (1959), Richter (1971) and Suzumura (1983)

[4] It also depends on the importance of strategic considerations on choice, see Hennipman (1980), who contrasts 'Pareto optimality' and 'Wicksellian unanimity' from this perspective, among others See also Hennipman (1976,1982)

[5] See Nagel (1970), Sen (1973b, 1977a, 1982a), Broome (1978), Elster (1979, 1983), Hirschman (1982) and Margolis (1982)

[6] Note also that the binary relation underlying choice need not be fully transitive (acyclicity is a weaker condition than transitivity), unless somewhat stricter conditions than those required for binariness hold [see Sen (1971)] An intransitive relation poses some additional problems if it is to be interpreted nevertheless as the relation of well-being But these 'technical' difficulties are ultimately less problematic than the more basic question of the relevance of motivation underlying choice in interpreting the binary relation of choice as reflecting well-being

[7] Such 'choices' can of course be counterfactually posed [see Harsanyi (1955), Suppes (1966), Sen (1970a, 1979b)] and the results are not without interest, but they provide a rather limited approach to actual interpersonal comparisons. See also Borglin (1982)

[8] By ingeniously combining choice information with explicitly defined social welfare

The choice-approach to well-being is, for these reasons, really a non-starter. But the other two—more classical and more reasonably defended—views of utility, viz., happiness and desire-fulfilment, are indeed serious candidates for serving as the basis of a theory of well-being. One difficulty that has to be faced by either of these approaches is the cogency, or at least *apparent* cogency, of the other. If happiness is important for well-being, can desire-fulfilment irrespective of happiness be a plausible approach to well-being? If the fulfilment of desires is quite central to well-being, can happiness irrespective of desire-fulfilment be a sensible approach to well-being? It is not hard to construct examples in which total reliance on one or the other—but not both—of the pair (desire-fulfilment and happiness) produces a view of utility and well-being which is immediately objectionable

This particular problem, to which I do not wish to attach great importance, points at the 'embarrassment of riches' *within* the utilitarian tradition. The more serious problems lie elsewhere in fact, to wit, in the poverty of the entire utility-based approach rather than in its apparent over-richness Both the views of utility have the twin characteristics of (1) being fully grounded on the mental attitude of the person, and (2) avoiding any direct reference to the person's own valuational exercise—the mental activity of valuing one kind of life rather than another The former I shall call 'physical-condition neglect' and the latter 'valuation neglect'

A person who is ill-fed, undernourished, unsheltered and ill can still be high up in the scale of happiness or desire-fulfilment if he or she has learned to have 'realistic' desires and to take pleasure in small mercies The physical conditions of a person do not enter the view of well-being seen entirely in terms of happiness or desire-fulfilment, except insofar as they are *indirectly* covered by the mental attitudes of happiness or desire And this neglect is fortified by the lack of interest, of these two perspectives, in the person's own valuation as to what kind of a life would be worthwhile Valuing is not the same thing as desiring, and the strength of desire is influenced by considerations of realism in one's circumstances Nor is valuing

functionals ['equity-regarding' and satisfying Dalton's (1920) principle of transfers'], Jorgenson and Slesnick (1984a, b), and Jorgenson, Slesnick and Stoker (1983) have been able to deduce the implied interpersonal comparisons of welfare The motivation underlying their work is not so much descriptive comparison of welfares, but developing and exploring a consistent framework for 'equity-regarding' policy making See also Jorgenson, Lau and Stoker (1980)

invariably reflected by the amount of pain if the valued object is not obtained.

Considerations of 'feasibility' and of 'practical possibility' enter into what we dare to desire and what we are pained not to get. Our mental reactions to what we actually get and what we can sensibly expect to get may frequently involve compromises with a harsh reality. The destitute thrown into beggary, the vulnerable landless labourer precariously surviving at the edge of subsistence, the overworked domestic servant working round the clock, the subdued and subjugated housewife reconciled to her role and her fate, all tend to come to terms with their respective predicaments The deprivations are suppressed and muffled in the scale of utilities (reflected by desire-fulfilment and happiness) by the necessity of endurance in uneventful survival

The limitations of the utility-based approach to well-being and advantage are particularly serious when we are concerned with *interpersonal* ranking rather than with comparisons of alternative possibilities for the *same* person It is not implausible to think that if a person desires life A over life B and is happier with A than with B, then the well-being of the person is greater with A than with B On the other hand, consider the person (call him 1) who has learned not to have overambitious desires and who is easily pleased Take a case in which he is much more deprived in terms of food, clothing, shelter, medical attention, etc , than person 2 (raised in more buoyant circumstances), and is nevertheless happier than 2 *and* has more desires fulfilled It is not at all obvious that 1 must be seen as having a higher level of well-being than 2, though both the perspectives of happiness and desire-fulfilment will recommend that ranking

In pursuing matters further, after rejecting the utility-based approach to well-being, note must be taken of the reasons for which the utility-based approach is rejected. This requires consideration of the actual conditions of living of a person (physical and mental) and also the need to consider the person's valuational activity (under actual or counterfactual circumstances), going beyond what the person is pleased or pained by and also beyond what he or she actually desires In the next two chapters these issues will be examined more closely, but before ending this chapter I would like to make two rather more positive remarks about the utility-based tradition than I have been able to make so far

First, while the utilitarian tradition suffers from the twin defects of 'physical-condition neglect' and 'valuation neglect', it does not

suffer from taking an alienated, commodity-fetishist view, which an approach that sees well-being as 'opulence' must do. Well-being is indeed sometimes seen as reflected by the commodity-command of a person (how 'rich' he or she is), and this is one of the motivations for 'real income comparison' in terms of market command over goods and services As an approach to interest this is, ultimately, a confusion of 'well-being' with 'being well off', and a confounding of the *state* of a person with the extent of his or her *possessions*

In many contexts the opulence-focused approach may well be quite a useful first approximation,[9] and this question will be viewed in the light of informational limitations in Chapter 6. But in terms of what we are really concerned with, well-being cannot in any way be identified with opulence The latter is, at best, one of the factors influencing the former The utilitarians—whatever their other limitations might be—have not been prone to commit this particular mistake, since their concern with the person, as opposed to commodities, is deep-seated (even if it is a bit off target as far as the features of the person is concerned, as argued above).

Second, the limitations of actual pleasure, pain and desire as guides to well-being have figured in the utilitarian literature, and there is a considerable tradition of systematically bringing in 'counterfactual' considerations such as what a person would desire 'with full understanding', or 'with cool reflection', or 'under ideal condition'.[10] Such 'idealization' poses problems of its own,[11] but in noting and emphasizing the need for refinement in developing a better notion of utility, some of the utilitarian authors have pointed to valuable directions that are of relevance in getting a grip on the complex notion of well-being. We must not spurn the insights we get from utilitarian moral philosophy, even as we reject utilitarianism.

[9] For example, in analysing such massive and crude phenomena as famines or widespread undernourishment, the notion of 'entitlement' (in the descriptive as opposed to moral sense) may be useful, and commodity command (and variations of it) may be the first things to look at [see Sen [(1981a), Arrow (1982), Desai (1984), Khan (1984) and Ravallion (1985)]

[10] See particularly Hare (1976,1981), Harsanyi (1976), Mirrlees (1982) and J Griffin (1982, 1984)

[11] See Sen and Williams (1982, introduction)

IV
FUNCTIONING AND WELL-BEING

In Chapter 2 the distinctions between commodities, characteristics, functionings and capabilities were discussed It is possible to argue that the well-being of a person is best seen as an index of the person's functionings. Since the distinctions between the different categories is rather crucial to pursuing this line of enquiry, there is a case for discussing—and illustrating—the distinctions a little more than was done in Chapter 2. Thereafter the functioning approach will be compared with other ways of judging well-being, and its advantages will be assessed.

Consider a commodity such as bread It has many characteristics, of which yielding nutrition is one. This can—often with advantage—be split into different *types* of nutrition, related to calories, protein, etc. In addition to nutrition-giving characteristics, bread possesses other characteristics as well, e.g., helping get-togethers over food and drinks, meeting the demands of social conventions or festivities For a given person at a particular point in time, having more bread increases, up to a point, the person's ability to function in these ways (i e., live without calorie deficiency, entertain others, etc). But in comparing the functionings of two different persons, we do not get enough information by looking merely at the amounts of bread (and similar goods) enjoyed by the two persons respectively The conversion of commodity-characteristics into personal achievements of functionings depends on a variety of factors—personal and social In the case of nutritional achievements it depends on such factors as (1) metabolic rates, (2) body size, (3) age, (4) sex (and, if a woman, whether pregnant or lactating), (5) activity levels, (6) medical conditions (including the presence or absence of parasites), (7) access to medical services and the ability to use them, (8) nutritional knowledge and education, and (9) climatic conditions.[1] In the case of achievements involving social behaviour and entertaining friends and relatives, the functioning will depend on such influences as (1) the nature of the social conventions in force in the society in which the person

[1] See Rand, Uauy and Scrimshaw (1984) See also Scrimshaw (1977), Sukhatme (1977) and Srinivasan (1983)

lives, (2) the position of the person in the family and in the society, (3) the presence or absence of festivities such as marriages, seasonal festivals and other occasions such as funerals, (4) the physical distance from the homes of friends and relatives, and so on.

As was explained in Chapter 2, the actual functioning achievements of person i will depend on the choice of the utilization function $f_i(\cdot)$ and the commodity vector x_i, and be given by $f_i(c(x_i))$, when $c(\ )$ is the function converting commodities into characteristics. But it was also explained that $f_i(\cdot)$, the utilization function, is partly a matter of choice, from F_i (the feasible set of utilization functions) Also, x_i is partly a matter of choice within the limits of the person's command over commodities given by income, prices, etc., confining the choice of x_i to some set X_i ('entitlements') [2] The totality of all the alternative functioning vectors the person can choose from, given by these contingent circumstances, is Q_i, and that reflects the person's capabilities, i e., the various alternative functioning bundles he or she can achieve through choice

It is important to distinguish between choice and non-choice factors in the determination of capabilities Q_i For example, a person cannot choose, or easily alter, his or her metabolic rate, so that a person with a high metabolic rate may have to be reconciled to a rather 'unfavourable' (in the context of nutritional *deficiency*) set F_i of utilization functions $f_i(\ )$. But within that F_i there might still be room for better husbandry through nutritional knowledge, medical attention, etc. In policy making, the elements of choice have to be clearly separated out for sensible resource allocation

The same type of questions will arise in the choice of commodity vectors x_i The person will have some choice within the entitlement X_i, though that choice may well be very limited in particular circumstances.[3] Resource allocation and policy making will have to address the question, among others, of expanding the limits of choice reflected in X_i and F_i.[4]

I come back now to the central question to be faced at this stage

[2] See particularly Equations (2 5) and (2 6)

[3] For example, famines may be easy to explain in terms of 'entitlement' considerations without introducing further factors [see Sen (1981a)], and this is to some extent—though less often—true in explaining endemic undernourishment as well [see Sen (1984a)]. The focus on income data in the analysis of development and poverty has its rationale in this part of the story [see Patel (1965), Pen (1971), Fields (1980), Kakwani (1980), Arrow (1982), Anand (1983), Atkinson (1983), Shorrocks (1983), Anand and Kanbur (1984), Desai (1984) and Foster (1984)]

[4] See Sen (1984a)

On what does the claim of functionings to reflect well-being rest? Basically, the claim builds on the straightforward fact that how well a person is must be a matter of what kind of life he or she is living, and what the person is succeeding in 'doing' or 'being'. The exercise must, in one way or another, take the form of valuing the functioning vectors reflecting the 'doings' and 'beings'.[5]

The question of what determines the valuations has yet to be more fully faced, but before that a comparison with rival claimants must be considered Why not *opulence*, or the person's command over commodities? The answer is straightforward: a person's well-being is not really a matter of how *rich* he or she is, and this is particularly important to bear in mind when we are dealing with large interpersonal variations of personal or social characteristics (e g., nutritional demands of pregnancy, medical demands of age, or social demands of particular customs) Commodity command is a *means* to the end of well-being, but can scarcely be the end itself To think otherwise is to fall into the trap of what Marx (1887) called 'commodity fetishism'—to regard goods as valuable in themselves and not for (and to the extent that) they help the person

Why not happiness, or desire-fulfilment? This question was already discussed in the last chapter, in assessing the claims of the utility approach to well-being There is more to be said on this, especially on what might appear to be the limitations of the alternative focus on functionings But to recall the main argument, the utility approach (involving both happiness and desire-fulfilment) suffers from the twin defects of 'physical-condition neglect' and 'valuation neglect' The rival claims of functionigs and utility as reflecting well-being can be assessed in the light of that earlier argument

The conflict between the utility view and the functioning view can be considered by taking a case in which person 1 is happier (or has desires more fulfilled) than person 2, despite being more deprived in terms of functionings (e g , being underfed, undernourished, or ill)—functionings that are seen by both to be valuable The question of valuation is a central one in this contrast. If 'being happy with' or 'desiring' were the same things as *valuing*, then the contrast would have been an unreal one Being 'happier' or having 'more desire fulfilment' would have then been indistinguishable from being in a more *valued* state of being. But valuation is a *reflective* activity in a

[5]Expressed in Equations (2.3) and (2 6)

way that 'being happy' or 'desiring' need not be. A poor, undernourished person, brought up in penury, may have learned to come to terms with a half-empty stomach, seizing joy in small comforts and desiring no more than what seems 'realistic'. But this mental attitude does not wipe out the fact of the person's deprivation. Nor does it imply that the person would not value the removal of that deprivation if it were to occur. He or she may even see its value *ex ante* if the removal is seriously considered and examined as a possibility.[6] The 'valuation neglect', reinforcing 'physical-condition neglect', makes the utility-view of well-being fundamentally deficient.

The functioning view has an easier run than the utility view partly because it avoids premature fixity. It divides up the problem of evaluation of well-being into two distinct (though not independent) parts, viz., (i) *specification* of functioning achievements, and (ii) *valuation* of functioning achievements. In some cases the latter, viz., the valuation problem, may well be trivial, when the generally accepted list of valuable functionings indicates that one bundle simply 'vector dominates' another. In dealing with well-being of the *very* deprived vis-a-vis others, such dominance relations may well hold. A lot of the immediateness of what are seen as 'obvious' social judgments arises from the identification of dominance.[7] But in other cases, there will be conflicts, and the issue of valuation may be quite a substantial one.

The utility approach tries to avoid the valuational issue by simply identifying valuation with utility in the form of happiness or desire-fulfilment. If that identification is rejected (as I have argued it should be), then the question of valuation remains open and has to be faced as a distinct exercise.

It is worth emphasizing that for valuation to have content, it need not necessarily have to generate *complete* orderings. The tyranny of 'required completeness' has had a disastrous effect on many other problems in economic measurement (e.g., inter-personal comparisons, indexing real income), offering us a false choice between

[6] Those utilitarians who take less traditional views of the content of 'utility', e g , Mirrlees (1982) and Hammond (1982), have themselves expressed the need for modifying 'the utility function that exactly represents existing tastes' [Mirrlees (1982, p 69)], even though the kind of cases—and arguments—they use to illustrate and defend this need have been rather different from the ones under consideration here

[7] The skepticism (and sometimes irritation) with which practical politicians approach the issue of valuation has some rationale in the implicit belief that dominance reasoning would cover most of the interesting cases

silence and babbling. Natural partial orders are *either* rejected as incomplete, *or* forced into arbitrary completeness, raising difficulties that need not have arisen It is important to recognize that many economic and social relations are inherently partial and incomplete.[8] Evaluation of well-being can plausibly be seen as belonging to that category It can quite easily be the case that while functioning vector *A* represents a higher level of well-being than *B* or *C*, the latter two may not be rankable vis-a-vis each other There is nothing illegitimate or defeatist in recognizing that the valuation rankings of well-being may have gaps.

If the fundamental need for the valuational exercise is accepted, then the search for practical methods of valuation can be given a place of its own (see Chapters 5–7). In that search, use may well be made of such information as strengths of desire, and other parameters that were considered (and rejected) earlier as *sources* of value (rather than as *informational clues* to value). The distinction is a simple one, but nevertheless worth spelling out to avoid a not uncommon misunderstanding.

To bring out the contrast most clearly, consider the special case in which value happens to coincide entirely with desire We can now distinguish between the two following propositions.

(I) *'I value x, and so I desire it,' and*
(II) *'I desire x, and so I value it.'*

The approach that is being developed in this monograph is perfectly consistent with (I), and indeed frequently enough desire may well be taken (by observers) as *evidence* of value But it is not in line with (II), which leans in a particular utilitarian direction The difference is a foundational one, and relates to the question as to whether desiring is itself a valuation, or at least itself a source of value [9] This can be denied (as indeed it *is* in the argument presented earlier) without rejecting the relevance of desire information in bringing out underlying—and often implicit—valuations

But it is valuation with which we are ultimately concerned in the functioning approach. If the desire-information is—*inter alia*—used, for which there is indeed a strong case, then its *derivative* importance as well as *contingent* nature have to be kept in view

[8] See Sen (1070a, 1973a, 1982a, 1984a), Majumdar and Sen (1976)
[9] This question is discussed further in Sen (1985a)

V
VALUATION AND RANKING

The problem of valuation of different functionings to rank overall well-being raises a number of different questions, varying from the foundational to the tactical. I briefly discuss some methodological issues here before moving on to more practical matters

There are some who would see the entire exercise of ranking well-being as a purely subjective one. Indeed in the traditional literature of welfare economics this is clearly the standard view. This view is not easy to sustain, and indeed the *purely* subjectivist position is, I would argue, ultimately rejectable. But in this monograph I shall not concentrate on these foundational issues,[1] and will seek a speedy passage to more practical matters However, some rather elementary questions have to be faced before practical things can be considered at all

One of the more discussed aspects of a subjectivist view of well-being is that interpersonal variations of the ranking of well-being are permitted. person 1's belief that personal state *A* is higher than *B* in terms of well-being, can consistently co-exist with person 2's belief that *B* is higher than *A*. The immediate question to ask in consequence of this thought is whether such co-existence must be impossible if the limits of objectivity are taken to extend well into valuational issues.

I believe the answer to that question is· no. Much depends on whether the claims of objectivity must be seen to imply that the ranking of well-being has to be *complete* and *unique* This is not a matter, I would argue, of what *lies behind* the well-being rankings, which is after all the bone of contention in the 'subjectivity' issue, but of the *nature* of these rankings, viz., whether complete or partial, position-independent or position-relative If 'the limits of objectivity' were to specify a partial order, viz , that *A* and *B* both involve higher well-being than *C*, without ranking *A* and *B* vis-a-vis each other, then person 1's belief that *A* is higher than *B* and person 2's belief that *B* is higher than *A*, are both consistent with the objective partial ordering

[1] See Scanlon (1975,1982), Nagel (1980) and Sen (1985a)

Furthermore, if the objective judgments (even if complete) are required to be position-dependent, then it is possible that person 1 may be free to (indeed may even be required to) place *A* above *B*, while 2 is, at the same time, free to (or required to) place *B* above *A*. The issue of position-dependence is a difficult one, which I have tried to discuss elsewhere in the context of moral judgments of states of affairs,[2] and I shall not pursue this fundamental question here. But I would like to record that it is only when both position-dependence is denied *and* the completeness of the well-being ranking is required that interpersonal variations must be, of necessity, ruled out, by the need for consistency with an objectivist view of well-being.

I am not arguing in this monograph in favour of an objectivist view (though I do believe that the 'limits' of objectivity extend well into the assessment of well-being), but I *am* claiming that an objectivist view would not necessarily rule out the possibility of interpersonal variations of well-being rankings.[3] One practical implication of this thesis is that the question of interpersonal variations may have to be faced irrespective of whether we take a purely subjectivist position *or* accept objectivity in comparisons of well-being. The need for making room for interpersonal variations cannot be avoided by simply opting for one view or the other of *what lies behind* the valuation of functionings.[4]

If there are several such valuational orders, the scope for uncontroversial assessment of well-being is restricted by the actual extent of variations among the orderings. Suppose $\mathbb{P}$ is an *m*-set of partial or complete orderings of functioning vectors, reflecting valuations

[2] See Sen (1982b, 1983b, 1985a).

[3] See Sen (1983b).

[4] It may be worth noting here that even if the practical exercise of well-being ranking turns out to be much the same whether or not we take a subjectivist view, it would not follow that the issue of subjectivity or objectivity is meaningless or pointless. As John Mackie (1977, pp. 21–22) has noted in the context of assessing the claim that objectivity or subjectivity of values makes no difference: '... it is quite true that it is logically possible that the subjective concern, the activity of valuing or thinking things wrong, should go on in just the same way whether there are objective values or not. But to say this is only to reiterate that there is a logical distinction between first and second order ethics: first order judgments are not necessarily affected by the truth or falsity of a second order view. But it does not follow, and it is not true, that there is no difference whatever between these two worlds. In the one there is something that backs up and validates some of the subjective concern which people have for things, in the other there is not.'

of functionings that are put forward as possible. It is, of course, quite likely that some of these valuations will be ruled out on further examination involving cooler reflection, fuller consideration of implications, etc.[5] The remaining n-set $\mathbb{P}^*$ of partial or complete orderings ($P^1, \ldots, P^n$) have then to be dealt with.

The intersection of the orderings (partial or complete) in $\mathbb{P}^*$ will yield a partial ordering P^*, such that xP^*y if and only if xP^iy for all $i = 1, \ldots, n$. P^* will be transitive, and indeed it can also be given a complete numerical representation, which may even be, under certain conditions, of the 'transparent' kind.[6]

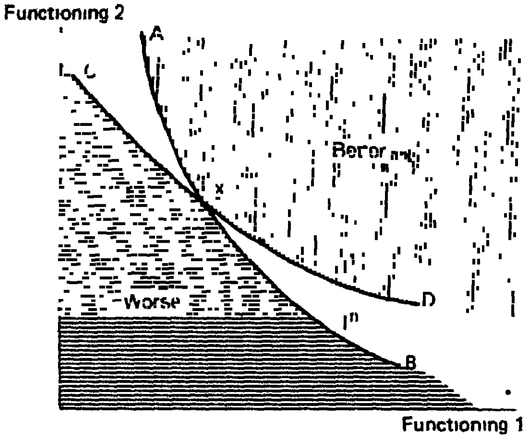


Figure 5.1 Intersection partial ranking

To illustrate, in Figure 5.1, if I^1 to I^n represent a family of 'indifference' curves[7] going through x, corresponding to P^*, then all points above AxD are clearly superior to x and all points below CxB are *clearly* inferior to x. While Figure 5.1 is concerned only with the ranking of a pair of functioning vectors, the intersection approach

[5] On the scope for reasoned assessment of such valuations, see Broome (1978), Hare (1981), Scanlon (1982), Parfit (1984) and Williams (1984), among recent contributions.

[6] See Majumdar and Sen (1976), also Debreu (1954), Peleg (1970) and Richter (1971). A representation $f(\ )$ is 'transparent' if and only if xP^*y implies that $f(x) > f(y)$.

[7] The important issue is not that the points on the same indifference curve must be indifferent to each other but that all points above the curve must be superior, and all points below inferior. On this question, see Little (1950).

can be used to yield a partial ordering with its standard technical properties.

There is some need for caution in interpreting the intersection partial ordering P^* It reflects the *minimum* that can safely be said, i.e , without contradicting any of the non-eliminated orderings (partial or complete) in $\mathbb{P}^*$. We may well want to say *more* In fact, for a person who believes, after reasoned reflection, that a particular ranking P^j is exactly right, the possibility of saying a good deal more than P^*, up to the full extent of P^j, is obviously open Where the person would decide to draw the line is ultimately a matter of what view he or she would take of the nature and basis of the valuational exercise and the status of other views expressed in $\mathbb{P}^*$. The intersection partial ordering P^* defines the *lower* limit of what can be said without any contradiction whatever—seeming or real.

VI
INFORMATION AND INTERPRETATION

Views of well-being can be classified according to at least two different criteria. One concerns the *interpretation* of well-being, and here I have already considered three distinct approaches (with further divisions within each approach) (1) utility, (2) opulence and (3) functionings (Chapters 1–3) While the first two approaches are more standard, it is the third that I have tried to spell out and defend An alternative basis for classifying the different approaches to well-being focuses on the *type of data* used for assessing well-being There are at least three different approaches here, based respectively on. (i) market purchase data, (ii) responses to questionnaires, and (iii) non-market observations of personal states

It is perhaps fair to say that the standard analysis of well-being in traditional economics is based on combining the utility view of well-being with reliance on market purchase data, i e , a combination of (1) and (i). It is possible to criticise this view not only for the dubious nature of the claims of utility (on each of its different interpretations) to represent well-being, but also for the limited reach of market purchase data in reflecting important aspects of well-being I have already discussed the former problem in Chapter 3 and I shall come to that latter question presently But, before that, a *third* difficulty might be briefly touched on, to wit, that of the *incongruity* of a view that sees well-being as utility and that, at the same time, relies on market purchase data to arrive at well-being, combining (1) with (i)

Can market purchase data really reflect utility, under either interpretation (desire-fulfilment and happiness)? It is very hard to claim that it can There are two distinct problems The first problem is that even if commodities x_i do provide the *basis* for utility $u = u_i(x_i)$, the value of utility depends also on the functional relation $u_i(\cdot)$ This problem was extensively discussed, *inter alia*, in Chapter 2 The second problem lies in the obvious fact that only some of the things that can serve among the bases of utility are in fact bought and sold in the market The market purchase data may not take adequate note of the influence of pollution, crime, social unrest,

communal disharmony, etc., which too can be seen as arguments of the utility function $u_i(\ )$

If we ignore the second problem, it is possible to argue that the market purchase data provide a good clue to *opulence* rather than to utility, and that the natural link-up is not between (1) and (i), but between (2) and (i). To illustrate the force of that point, consider two persons with *identical indifference maps* over market-purchased commodities, i.e., identical 'tastes', as it is typically defined in consumer economics Despite the congruence of indifference maps, it is possible that one of them, say person 1, has a generally more favourable utility function than person 2 That is, $u_1(x) > u_2(x)$, for all x, even though both $u_i(\cdot)$ *rank* the commodity vectors in exactly the same way Consider now the following case, with x_1 and x_2 the respective commodity vectors in the two periods 1 and 2:

$$u_1(x_2) > u_1(x_1) > u_2(x_2) > u_2(x_1). \tag{6.1}$$

Person 2 has a higher command over commodities, x_2 is preferred to x_1 by both persons. And at the same time, person 1 has higher utility than person 2, since $u_1(x_1) > u_2(x_2)$

There is nothing puzzling about this contrast Utility comparisons must take note of differences in the utility function (even if the 'tastes' are the same), whereas there is no need to do this if we are just comparing the *commodity bases* of utility, which can be done in a straightforward way when tastes are the same It is the latter that corresponds to opulence, and thus the commodity information is directly relevant and adequate for assessing opulence in a way it cannot be for assessing utility [1]

This immediate linkage between opulence and market-purchase data is threatened by the presence of things that are not bought and sold in the market and which are nevertheless sought by people In order to get a better view of opulence, the market-purchase data have to be supplemented by information gathered from other sources relating to non-purchased things such as fresh air, absence of crime, social peace, etc [2]

[1] See the contrast between 'situational comparisons' and comprehensive comparisons' in Sen (1976b, 1979a) On related matters see Fisher and Shell (1972) and Gintis (1974)

[2] Some use can be made even of the market-purchase data to assess the value the consumers attach to fresh air absence of crime, etc , by looking at the price differential of residential accommodation in different regions with varying characteristics of air, crime and so on But such indirect information has clear limitations, arising from

There is a further problem in linking opulence with market-purchase data—one that may look formally rather similar to the last problem, but which raises difficulties of quite a different kind. The market purchases reflect what the 'consumption unit', e g., the family, gets from the market. It does not tell us what the individual members get to consume. There is the further problem of division *within* the family and other consumption units In fact, individual members of the family do not typically purchase goods and services in the market, at least as far as food, shelter, etc , are concerned. Very often they get these things from *sharing* what has been bought in the market for the family as a whole.

This particular problem may not be a source of great difficulty, if the divisions within the family follow some general pattern of equality, taking note of differences of needs. Models of 'equivalence scales',[3] while formally neutral between different family objectives, work most sensibly when the problem can be rendered trivial through some assumption of a purely benevolent head [4] The problems become serious when such an assumption cannot be made, and in particular, when inequalities within the family are clearly important, e g., sex bias, or neglect of children.[5] I shall discuss and illustrate this question later (in Appendix B), specifically in the context of assessment of *functionings* (and capabilities) of individuals of different sexes, but I must note here that the assessment of *opulence* becomes particularly problematic when unequal divisions within the family drive a wedge between the prosperity of the family and the commodity command of individual members.

Coming back now to the earlier issue of assessing *utility* as opposed to *opulence*, the problematic nature of the linkage between utility and market-purchase data raises the question as to whether some other linkages can be more sensibly used. Here the claims of

motivational variety in locational choice, failures of expectation, differences of incomes among different buyers, and so on

[3] See Deaton and Muellbauer (1980, part three) for an illuminating account of this literature See also Engel (1895), Rothbarth (1941), Prais and Houthakker (1955), Barten (1964), Muellbauer (1977a, b), Pollak and Wales (1979), Deaton (1981) and Pollak (1983)

[4] The most convenient assumption would be that of Becker (1981, p 192) 'In my approach the "optimal reallocation" results from altruism and voluntary contributions, and the "group preference function" is identical to that of the altruistic head, even when he does not have sovereign power '

[5] See Gopalan (1979), Chen, Huq and D'Souza (1980), Sen (1981b), Kynch and Sen (1983) and Sen and Sengupta (1983)

informational sources of type (ii), viz., responses to questionnaires, have to be considered very seriously Since utility stands for happiness or desire-fulfilment, it is natural to think that the best source of information on this must be the person whose utility is being considered. (Is she happy? Are his desires fulfilled?) Oddly enough, economics has typically entertained great doubts about direct questioning on these matters, preferring to obtain answers by indirect means such as deducing them from market purchases I have examined elsewhere the reasons for these doubts and discussed why these reasons are not ultimately persuasive [Sen (1973b, 1977a)].

The questionnaire method has, in fact, been extensively used in recent years for empirical studies of utility and income evaluation. By far the most impressive works in this area have come from the 'Leyden school', beginning with the pioneering contribution of Van Praag (1968). A great many studies have been done about people's own assessment of their position and that of others, and their evaluation of incomes, welfare, etc.[6] While the questionnaire method is not confined to evaluating utility only, it has very often provided a more sensible basis for utility evaluation and comparison than the 'no question asked' format of utility estimation favoured by traditional consumer analyses.

The traditional attempt at tying utility to market-purchase data, i e., linking (1) with (i), can indeed be replaced by relating, on the one hand, utility with questionnaire analysis, i e., (1) with (ii), and on the other, opulence with market-purchase data, i e., (2) with (i). These links are not, of course, pure or straightforward, and practical exercises of information gathering have to take note of many other connections It is only as sensible starting points of empirical analysis that the linkages of (1) with (ii) and (2) with (i) have obvious merits

So far, in this chapter, I have said little about functionings. Some of the particular functionings have been much discussed in the context of 'development indicators', 'basic needs' fulfilment, 'quality of

[6] See particularly Van Pragg (1971, 1976, 1978), Van Praag and Kapteyn (1973), Kapteyn and Van Praag (1976), Kapteyn (1977), Van Herwaarden, Kapteyn and Van Praag (1977), Goedhart, Halberstadt, Kapteyn and Van Praag (1977), Van Praag, Kapteyn and Van Herwaarden (1978), Van Praag, Goedhart and Kapteyn (1980), Van Herwaarden and Kapteyn (1981), Kapteyn and Wansbeek (1982a, b) Van Praag, Hagenaars and Van Eck (1980), Van Praag, Hagenaars and Van Weeren (1982), Van Praag, Spit and Van de Stadt (1982), and Hagenaars and Van Praag (1983) See also Easterlin (1974), Simon (1974) and Scitovsky (1976)

life' index, 'levels of living' calculations, and so forth. Longevity and literacy in particular have received a good deal of attention in the development literature.[7] The informational bases of these studies have been non-market, non-questionnaire observations of the states of persons and their living conditions. This relates (3) to (iii) in terms of our classification.

It is natural to make extensive use of non-market direct observations of conditions of persons to understand the functionings that they achieve. It can be argued that this type of investigation can sensibly be extended to cover other conditions of persons which the economic literature has been rather reluctant to examine, in particular, morbidity and undernourishment, which relate to some important functionings that frequently fail badly in poor developing countries (see Appendix B).[8]

The tendency of welfare economics to ignore these basic constituents of well-being is one of the striking limitations of our discipline And that remarkable gap has not been bridged even by the literature on economic development. The reluctance to go into medical matters has been shared by most of the economic traditions, despite their diversity in other respects. As a result, only rather gross facts such as longevity and mortality have tended to figure in the development literature (and even that has been rather rare in welfare economics) The 'quality of life' has typically been judged by such factors as longevity, which is perhaps best seen as reflecting the 'quantity' (rather than the 'quality') of life.

In the richer countries, the functionings involving longevity, nourishment, basic health, avoiding epidemics, being literate, etc., may have less variation from person to person, but there are other functionings that do vary a great deal. The ability to entertain friends, be close to people one would like to see, take part in the life of the community, etc , may vary a good deal even within a rich

[7] See Naoroji (1871), Pant (1962), Adelman and Morris (1973), Adelman (1975), Ganguli and Gupta (1976), Haq (1976), Herrera et al (1976), ILO (1976,1984), Ghai et al (1977), Grant (1978), K Griffin (1978), Streeten and Burki (1978), Gwatkin (197-), Morris (1979), Chichilnisky (1980), Guhan (1981), Streeten (1981a, b), Stewart (1985), among others A compound index of longevity and per capita real GNP was suggested in Sen (1973c) See also Lipton (1968), Kakwani (1980), Guha (1981), Silber (1983)

[8] For interesting examples of the use of anthropometric data for historical analysis, see Floud and Wachter (1982) and Fogel, Engerman and Trussell (1982) See also Gopalan (1979,1983), Sen (1981b), Sen and Sengupta (1983), Mundle (1984), UNICEF (1984), Vaidyanathan (1984)

country, such as the USA or the UK.[9] The ability to live a life without being ashamed of one's clothing, etc., is another that has been seen as important, going back at least to Adam Smith and Karl Marx.[10] There are other functionings (for example, those involving literary, cultural and intellectual pursuits on the one hand, and vacationing and travelling on the other) which involve a good deal of variation amongst the people of even the richer countries, and which raise questions of assessment and valuation.[11]

Information concerning these functionings has to be sought both from non-market direct observations and from questionnaires, i.e., (ii) as well as (iii). In fact, in some contexts, even market-purchase data may also sensibly be used for indirectly ascertaining functionings, since direct observation of functionings and questioning the subjects about them, might both be difficult and defective. For example, information about one's clothing ability can rather sensibly come from market-purchase data. The same may hold for the observation of the use of electricity, heating, travel, telephone, etc., influencing some of the important functionings.

It was argued earlier (Chapter 2) that nutritional functionings may be rather badly approximated by information regarding food purchases (or even food consumption), because of variations in the relation between commodities and functionings due to such factors as metabolic rates, body size, etc. There is the further problem that with inequalities within the family, the market *purchase* data may be rather remote from individual *consumption*. There is, thus, a good case for looking directly at nutritional achievements (see Appendix B). Nevertheless, such observations may sometimes not be easy to make and may require time and resources which extend beyond the limits of the study. In that case, the use of market-purchase data may well be the best that can be done, even though the 'second-best' nature of that choice must be fully borne in mind.

Finally, the question of identification of functionings has to be

[9] See Wedderburn (1961) and, particularly, Townsend (1979). An excellent philosophical discussion of the relevance and importance of these variations can be found in a regrettably unpublished paper by John Bennett (1979).

[10] Smith (1776, pp. 351–352) and Marx (1867, p. 150).

[11] A lot of interesting and important work has been done on related matters under what Erikson and Uusitalo (1984) call 'the Scandinavian approach to welfare research'. See Allardt (1973, 1977, 1981), Johansson (1973), Roos (1973, 1978), Uusitalo (1975, 1978), Kandolin and Uusitalo (1980) and Ringen (1984), among other contributions.

supplemented by that of their valuation. It should be obvious that the valuation exercise can offer a considerable role to the method of the questionnaire. The problem, however, is made a good deal more complicated by the fact that questions of valuation are often hard to pose, and harder to answer, and also by the fact that the need for cool and non-mechanical reflection on these issues is not easy to fulfil. I have, I fear, no magic solution to offer in dealing with these complex questions, but no matter what compromise solutions we arrive at for our practical exercises, the exacting requirements of a satisfactory solution have first to be recognized

As was mentioned earlier (Chapter 3), sometimes it might make sense to use utility-type information about strength of desire as reflecting valuation, even though the two are neither identical, nor invariably closely related to each other. Sometimes even market-choice information can be used to arrive at weights to be attached to commodities and—from them—to guess the valuation of the corresponding functionings.[12] But the derived and contingent informational role of these observations must be distinguished clearly from the claimed foundational role of these variables under some variant of the utility-based approach to well-being (see Chapter 3).

In all these exercises clarity of theory has to be combined with the practical need to make do with whatever information we can feasibly obtain for our actual empirical analyses. The Scylla of empirical overambitiousness threatens us as much as the Charybdis of misdirected theory

[12] See Sen (1976b,1979a) Also Graaff (1977), Dutta (1978), Hammond (1978), Roberts (1980b), Atkinson and Bourguignon (1982), Broder and Morris (1983), and Bhattacharya and Chatterjee (1983)

VII
WELL-BEING AND ADVANTAGE

In the first chapter the notion of well-being was contrasted with that of advantage. Well-being was seen as an assessment of the particular achievements of the person—the kind of 'being' he or she succeeds in having. On the other hand, advantage, it can be argued, has also to take note of the real opportunities faced by the person. Assessment of advantage must, in this view, involve the evaluation of a *set* of potential achievements and not just the actual one. I shall go into this set-evaluation problem presently, and will also argue that the lines of the distinction are less clear-cut than they may first seem. But before that, it is necessary (in this final chapter) to gather together the main thoughts from previous chapters on the subject of *well-being*. Also we have to face some problems neglected in the earlier chapters, e.g., those dealing with issues of 'aggregation'.

The primary specification of a person's well-being is in terms of a functioning vector b_i. It can be converted into a scalar measure of well-being only through a real-valued 'valuation function' $v_i(\ )$, mapping functioning vectors into numerical representations of well-being (Chapter 2). The valuation of functioning vectors may, quite possibly, not coincide with that of utility, in any of its interpretations—(i) happiness, (ii) desire-fulfilment, or (iii) choice (Chapters 2–4). The valuation may or may not be complete, and the representation of well-being may sensibly take the form of a partial ordering (Chapter 5). The 'intersection partial ordering' provides a 'non-controversial' first step in combining alternative views of well-being, and it is possible to build on this minimum partial order to go beyond that to more extensive orders (Chapter 6). There are several different sources of information that can be used severally and jointly in the assessment of well-being, once the differences in the evaluation of 'opulence', 'utility' and 'well-being' have been clearly noted and informationally assessed (Chapters 3–6).

While the identification of utility with well-being is deeply problematic, this does not imply that utility information is of no relevance to the assessment of well-being. First, utility in the sense of *happiness* may well be included in the list of some important functionings relevant to a person's well-being. Second, utility information

reflected in *desires* and *choices* may serve important roles in providing *evidence* of valuation (Chapter 3), even though such 'evidential' reasoning must be seen as tentative, and especially doubtful when faced with contrary information, e.g., from responses to valuational questions (Chapter 6).

The most important failings of the utility calculus may arise in dealing with *interpersonal* comparisons. This is not because such comparisons cannot be made [as argued by Robbins (1938) and others]. They certainly can be made, and in several different ways.[1] Rather, the problem is that interpersonal comparisons of utility can give a very distorted picture of well-being (Chapters 3–4). The psychological features that are reflected in utility—related to desires, happiness, etc.—have to adjust to unfavourable circumstances, thereby affecting the metric of deprivation and their evidential importance (Chapter 3).

As it happens, practical interpersonal comparisons of utility are not particularly easy to make anyway (an issue that has to be distinguished from the Robbinsian question of the possibility and status of interpersonal comparisons), and between-person comparisons of either happiness or desires involve various complications Thus, from the point of view of practical measurement, the *additional* difficulty arising from non-reliance on utility information in making interpersonal comparisons of well-being is perhaps not very great [2]

[1] See Little (1950), Harsanyi (1955), Suppes (1966), Van Praag (1968), Sen (1970a), Van Praag and Kapteyn (1973) and Arrow (1977) For illustrations of different approaches to the *use* of interpersonal utility information, see Harsanyi (1955, 1976), Suppes (1966), Sen (1970b, 1979b), Hammond (1976, 1982), Strasnick (1976), d'Aspremont and Gevers (1977), Arrow (1977), Maskin (1978), Gevers (1979), Ng (1979), Roberts (1980a), Mirrlees (1982), and Blackorby, Donaldson and Heymark (1984), among others

[2] It is possible, of course, to combine utility information in *intra*personal valuation with non-utility weights in *inter*personal assessment [see, for example, Sen (1976b), Graaff (1977) and Roberts (1980b)] As it happens, the more discussed problems of such hybrid formats arise often from the purely utility side of the picture (when utility is derived from market choices and then marshalled in a manageable, e g price-independent, form) For example, the format becomes especially complicated when individual preferences are not identical and quasi-homothetic [see Gorman (1953), Graaff (1977), Hammond (1978) and Roberts (1980b)] These problems can be avoided either by making some unrealistic but common empirical assumption (e g , of identical quasi-homotheticity), or by dropping 'welfarism' (that social welfare must be a function of individual utilities—whether or not interpersonally scaled in purely utilitarian terms), see Sen (1979a, c) The difficulties—while present in hybrid structures—arise ultimately from the purely utility-based part of the picture [on which, see Hammond (1978)]

However, the assessment and use of valuational information regarding functionings are not themselves easy, and the actual derivation of social weights would tend to involve practical compromises (Chapter 6). It has been argued in this monograph that (1) the vector of functionings is itself of some interest in understanding achievements of well-being (even when a scalar conversion is not possible), and that (2) partial orders that take note of valuational incompleteness and conflicts are of considerable practical use and relevance (Chapter 5) Faith in the 'all or nothing' is not the best way of approaching the assessment of well-being.

The wider the differences in the valuations of functioning vectors, the more restricted is the scope for non-controversial judgments of well-being. The more the agreement, the greater will be the reach of the 'intersection partial ordering', and less the conflict in obtaining articulate partial orders (Chapter 5).

To prevent some possible misunderstandings of the nature of the valuational problem in the assessment of functionings, two critical questions may now be posed.

(I) How do we avoid Arrow-type impossibility [Arrow (1951)] in aggregating different valuational judgments of different people?

(II) Even if everyone's valuation maps coincide, isn't there a further problem in using the same valuation function in assessing the well-being of different people, exactly comparable with the problem (discussed in Chapter 6) of utility functions differing despite the coincidence of preference map?

I take up the two questions in turn

Regarding the 'impossibility' problem, there are several distinct issues to be noted First, the Arrow impossibility result can be avoided by the use of a richer informational base, as has been widely discussed in the literature [see, for example, Harsanyi (1955), Sen (1970a), Hammond (1976), d'Aspremont and Gevers (1977), Arrow (1977)] [3]

Second, if we do not insist on completeness of social judgments (or on the permitted incompleteness being of some rather limited type[4]), then having social partial orderings provides a method of securing possibility at the cost of being silent on some particular comparisons.

[3] See the references to the extensive literature on this given in footnote 1 of this chapter

[4] See Barthelemy (1983) and Weymark (1984) for impossibility theorems in the Arrow-type format with social partial orderings satisfying certain regularity conditions

Indeed, the 'intersection partial ordering' provides a non-controversial first step in that direction (see Chapter 5).

Third, and perhaps most important, the problem of getting a common valuation function (complete or partial) in judging the *well-being* of different persons is a different exercise from that of judging *social states*, taking note of the preferences of different people. The object of the exercise, in this monograph, is to obtain a *common standard* of well-being, rather than to resolve interpersonal conflicts in the assessment of social states. For example, if two persons have identical valuation functions, then the common standard problem is trivially resolved, but the social-choice problem of the Arrow-type will still persist since the two could rank social states differently (despite sharing the same view of individual well-being), since their respective deals in the social states can be different To translate the Arrow problem of impossibility into the case of the 'common standard', the relevant axioms have to be given highly implausible interpretations Given the fact that there would tend to be considerable agreement—in general—on ranking many of the functioning vectors (including vector dominance) among different persons, the appropriate 'domain' conditions would be altogether different

This is not to say that the issue of different views of valuation can be resolved without any problem whatever But the differences in this case are, by their very nature, more limited, the intersections of the rankings typically quite large, and the practical problems of sensible aggregation less exacting. Deriving a common standard of well-being is a very different exercise from interpersonal aggregation of rankings of social states

I turn now to (II) The analogy between the well-being function $v_i(b_i)$ and the utility function $u_i(x_i)$ does not hold as far as this particular problem is concerned This is because utility—whether interpreted as happiness or desire-fulfilment—has independent descriptive content, whereas well-being, as seen here, is nothing other than the *value* of the functionings achieved. While utility, too, can be so defined as to have no independent descriptive content, this will cut it off from the traditional meaning of utility and from the substantive content which gives utility its appeal and importance.[5] The mental characteristics of happiness, desire, etc , exist in their own right, and the utility function $u_i(x_i)$ establishes an empirical connection between commodities and utility In contrast, the valuation

[5] See Bentham (1789), Sidgwick (1874), Ramsey (1926), Harsanyi (1976), Hare (1981) and Mirrlees (1982)

function $v_i(b_i)$ sees well-being as 'supervenient' on descriptive information (functionings, in this case), without having an independent descriptive content.[6] As a result, there is no obvious analogue of the *inter-utility-functional* comparisons in the case of valuation of well-being.

This does not indicate that everyone must have the same valuation of the different functionings. Indeed, the subscript i in $v_i(\cdot)$ is referring precisely to the authorship of the valuational statement. But if different people's valuations do differ, then we have a *disagreement* as to what the appropriate valuations are. We may try to argue out which valuation is correct; or take only the intersection partial order as non-controversial, or even possibly take the view that there is nothing 'right' or 'wrong' about these valuations (I personally won't, but some people clearly would). But there is, in none of these cases, the possibility of using one valuation function for one person, another for the second, and then make *inter-valuation-functional* comparisons of the relative well-beings of the two persons.[7] The inter-utility-functional comparisons made sense only because utility has descriptive content of its own, and it *is* sensible to ask whether one person is happier than another, or has more desire-fulfilment, despite the two persons having two different utility functions.

In this sense the problem of valuation of well-being is rather similar to that of *opulence* (Chapters 1 and 6), which can be seen as a 'supervenient' notion based on commodity commands. If one person has a higher command over commodities than another, then he or

[6] On the notion of supervenience, see Hare (1963) and Mackie (1977). Hurley (1984) makes extensive use of the concept in an argument involving social choice theory and ethics. A theory of well-being will see it as supervenient on functionings if and only if as a matter of logical necessity, the assessment of the well-being of two personal states can differ only if they do not fully coincide in terms of functionings. A 'weak' form of supervenience will relate the functionings of a particular person to that particular person's well-being, whereas a 'strong' form will eliminate the personal reference, making it interpersonally applicable, i.e., even two different persons cannot be seen as having two different levels of well-being unless they differ in at least one functioning achievement. It is perhaps worth mentioning (to avoid a possible misunderstanding) that the supervenience of well-being on functionings would not imply its being supervenient on commodity possession, since the relation between commodities and functionings can vary (Chapter 2).

[7] This issue must be distinguished from the possibility that the valuation function itself may have the identity of the person as an additional variable, so that the same functioning vector may yield different well-beings to two different persons according to the *same* (but person-specific) view of well-being. (See footnote 6 of this chapter, see also Chapter 5.) The differences in the authorship of the statement regarding valuation [the subscript i in $v_i(\ )$] has to be distinguished from differences in the person whose well-being is under examination.

she can sensibly be seen as more opulent, though not necessarily happier[8] Well-being, if supervenient on functionings, may similarly be decidable on the basis of specification and assessment of functionings, without having to coincide with some additional magnitude (like utility) with independent descriptive content.

In this respect the evaluation of the bundle of functionings for the determination of well-being is like the problem of 'real income comparison', interpreted in terms of opulence, and not like utility comparison, interpreted in terms of happiness or desire-fulfilment The coincidence of the indifference map (in the case of *opulence* over the *commodity space*,[9] and in the case of *well-being* over the *functioning space*) is adequate to guarantee simple interpersonal comparisons of opulence and well-being in a way it is not for interpersonal *utility* comparisons.

I turn now to the postponed question of 'advantage'. The evaluation of functionings is only a part of the story if we look not at well-being as such, but at a person's advantage. As has already been mentioned, advantage can be seen as referring to the opportunities a person has, of which only one will be chosen The problem of *set-evaluation* raises interesting and difficult problems that require careful attention

The nature of set-evaluational problems (in this type of context) has not yet received the attention that it may deserve Recently, there have been a number of related contributions in this area,[10] but the motivation for set-evaluation has largely been guided by choice under uncertainty. In most of the contributions, the chooser has been seen as picking a set, from which a particular element is *then* chosen by 'nature' The axiomatic structure appropriate for such a problem would tend to be inappropriate for our problem of judging a person's advantage when the person himself, or herself, chooses a

[8] Nor necessarily having more well-being, since the relation between commodity possession and functionings may vary

[9] It is possible to think of opulence not just in terms of the commodity *vector* commanded, but in terms of the set of commodity vectors that a person can command ('entitlements') In some contexts, the latter has much greater relevance to ideas of fair distribution See Archibald and Donaldson (1979), whose notion of the 'choice set'—the set of commodity vectors from which the person can choose one—has some clear affinities with the notion of advantage outlined here But they deal with sets of commodity vectors, whereas the concern here is with sets of functioning vectors

[10] See Kannai and Peleg (1984) Fishburn (1984), Heiner and Packard (1984), Barbera and Pattanaik (1984), Holzman (1984), Barbera, Barrett and Pattanaik (1984), Pattanaik and Peleg (1984), and Nitzan and Pattanaik (1984) A different type of problem is discussed by Koopmans (1964) and Kreps (1979)

particular element from the set of feasibilities. For example, the axiom (GP) used by Kannai and Peleg (1984) includes the requirement that adding an alternative seen as inferior by the person to all those already in the set will make the set worse [11] For choice under uncertainty, this is indeed reasonable, since the person might quite possibly end up with the inferior alternative in the enhanced set. If, however, the intention is to assess the opportunities that a person has, then adding an inferior alternative need not make the position any worse Whatever could be chosen earlier can *still* be chosen.

It may be useful to begin with the tentative notion that the value of a set of functioning vectors—the person's 'capability set'—is given by the value of the best element in that set:[12]

$$V(S) = \max_{x \in S} v(x). \tag{7 1}$$

If that is all there is to it, then the problem of evaluation of capability and of advantage is a purely derivative one In this view a 'wider choice' is valued only because this may permit the choice of a better element, and, in case it does not, then the widening of the set is of no value whatsoever. This approach may well be called 'elementary' evaluation; it assigns to the set the value of the *best element* in that set

Elementary evaluation may be criticised from several different perspectives First, defined in this form, such an exercise simply may not be *possible*, when the elements in a capability set are not fully ordered. As was discussed earlier, there is a strong case for taking partial orderings as the basic relations of well-being over functioning vectors This incompleteness must call for some extension or modification in the procedure of elementary capability evaluation

One simple extension of the procedure, is to compare two capability sets S^1 and S^2 by checking whether there is an element in one set which is better than every element in the other set Taking R and P as the 'at least as good as' and 'better than' relations in comparing elements (functioning vectors), the set-comparison relation 'at least as good as' R^* can be defined as

[11] This is derived from an axiom proposed by Gardenfors (1979), again in the context of a problem in which choice under uncertainty is a central feature

[12] If there is no maximum value $v(x)$ in that set, we can use the supremum The motivation will be similar since we can get arbitrarily close to this value, and it is the best value to which we can get arbitrarily close In the discussion that follows, I stick to finite sets

$$S_1 R^* S_2, \quad \text{if and only if}$$
$$\exists x \in S_1, \quad \forall y \in S_2: \quad xRy. \tag{7.2}$$

The asymmetric set-comparison relation P^* (a 'better set than') can simply be taken to be the asymmetric factor of R^*, that is,

$$S_1 P^* S_2, \quad \text{if and only if}$$
$$S_1 R^* S_2 \quad \text{and } \textit{not} \quad S_2 R^* S_1. \tag{7.3}$$

It is easily checked that, given that R is a partial order (i.e., transitive and reflexive), R^* will partially order the capability sets

This extension makes a difference—a rather slight one—from the procedure based on (7.1), only when R is incomplete. When R is a complete ordering, the ranking of sets according to their value given by (7 1) will coincide with ranking yielded by (7.2) and (7 3) I shall call this general approach 'elementary capability evaluation', using (7.2) and (7.3) as the more general format, which subsumes the other

A second, and more serious, problem arises from the difficulty in going *beyond* the partial order R^* given by (7.2). How can we extend this R^*, which can be incomplete? Some rules that might be appealing—at least initially—in completing R^*, may prove to be not so. To consider an example, for finite sets, take a 'scoring system' that associates with each element x of a set S a number $N(x, T)$ vis-a-vis a set T representing the number of elements of T that x fails to be at least as good as,

$$N(x, T) = \# [y \mid y \in T \text{ and } \textit{not } xRy]. \tag{7 4}$$

The 'score' of a set S vis-a-vis T can be seen as the minimal value of $N(x, T)$ for any element of S

$$N^*(S, T) = \min_{x \in S} N(x, T) \tag{7.5}$$

A set S can be taken to be superior to T if and only if S's score vis-a-vis T is smaller than T's score vis-a-vis S We define here the 'at least as good as' relation R^*, of which 'better than' is the asymmetric factor P^*

$$SR^*T \quad \text{if and only if} \quad N^*(S, T) \leq N^*(T, S) \tag{7.6}$$

In this view a set is better than another if the best performing element (strictly speaking, one of the best performing elements) of S vis-a-vis T performs better than the best performing element T vis-a-vis S. I shall call this the 'failure-counting rule'.[13]

The failure-counting rule has some obvious plausibility It is easily checked that if the element ordering relation R is complete then (7 4)–(7.6) will generate a complete ordering coinciding with the results of 'elementary' evaluation. However, when R is incomplete, the failure-counting rule will still yield a complete ordering Given the rather 'overdemanding' nature of completely ranking the sets when the elements are only incompletely ordered, it is not surprising that the failure-counting rule can lead to problems. It can be shown to contradict other—not themselves implausible—requirements, and by combining the two sets of requirements, 'impossibility results' can easily be generated.[14]

For example, the failure-counting rule can easily lead to an intransitive—indeed strictly cyclical—set-evaluation relation R^* (with P^*-cycles) Take a universal set of six elements (a, b, c, x, y, z), with $S_1 = (a, b, c)$, $S_2(x, y)$ and $S_3 = (z)$. Let the partial ordering R of the elements be given by

$$zPa,\ aPb,\ bPc, xPy.$$

No relation other than the transitive closures of these holds. Given this, it is easily checked that

$$\begin{array}{lll} N(S_1, S_2) = 2, & N(S_2, S_1) = 3, & N(S_2, S_3) = 1, \\ N(S_3, S_2) = 2, & N(S_3, S_1) = 0, & N(S_1, S_3) = 1 \end{array}$$

This yields. $S_1P^*S_2$, $S_2P^*S_3$; $S_3P^*S_1$: a cycle.

Such problems can be avoided by choosing axioms differently. In a somewhat different context, Kreps (1979) has outlined an axiomatic

[13] Stig Kanger (1975) has explored the general approach of choosing from a set on the basis of the relative performance of the elements of that set vis-a-vis elements of *another* set While (7 4)–(7 6) (and 'the failure-counting rule') are addressed to a different exercise from Kanger's, there are logical connections between the two procedures

[14] Notice that such 'impossibility results' would differ both in content and in spirit from the ones identified by Kannai and Peleg (1984) and others (see footnote 10 of this chapter) related to set-evaluation when the axioms are motivated by the problem of choice under uncertainty

structure for choice of sets (what he calls 'opportunity sets') with binariness, transitivity and representability. The substantive content of the axioms are motivated by 'uncertainty of future tastes' In the context of some choice problems, we may have to choose *first* one 'opportunity set' from a class of such sets, and *then* at a future date choose an element from the opportunity set that was chosen earlier [see Koopmans (1964)]. If we already knew our complete future preference R, then the whole exercise could have been done in terms of R, and 'elementary' evaluation of the sets would have been quite non-problematic (given the motivation for this Koopmans-Kreps problem) But future rankings may be unknown, and we are not in a position to do an 'elementary' evaluation today in line with fully known future preference

The Koopmans-Kreps problem has some obvious relevance to the problem at hand. The 'uncertainty of future taste' has logical similarity with the incompleteness of the ranking of functioning vectors. Indeed if future tastes are known partially, then their intersection will yield an incomplete order much like the well-being partial order

However, the differences between the two exercises are also substantial First, the future tastes problem will end, in fact, with a complete order that presumably will emerge in the future, although unknown now. In contrast, there is no such 'true' complete ordering for the well-being ranking of functioning vectors when the well-being order is incomplete Second, the Koopmans-Kreps formulation does not start with *some* already known partial order that will—*inter alia*—hold in the future. So the formulations of what is known and what is not are rather different Finally, the Koopmans-Kreps problem is concerned with *choice*, and choice that has to be rationally made now. The comparison of capability sets is not motivated only by considerations of 'rational choice'.[15] The capability comparison may be aimed just at determining which of two particular persons is the more advantaged (rather like in comparisons of standard of living

[15] Indeed, considerations of rational choice must introduce other aspects of a person's choice, e g , values other than pursuing one's own well-being A serious consideration of what a person should choose has to take fuller note of the resulting state of affairs [and in non-consequentialist approaches, of other things as well, see, for example, Williams (1973)] The notion of 'advantage', when seen *not* just in terms of pursuing one's own well-being but in terms of wider objectives and obligations [see Rawls (1971)], would require us to go well beyond the assessment of functionings and capability sets

or of real income). There is no compulsion to rank the capability sets *completely*, nor to have a partial order extensive enough for a 'best' capability set to be identified (and chosen). It is perfectly permissible to say that while capability set A is more advantaged than B, set B cannot be ranked vis-a-vis C in terms of over-all advantage. In comparing the advantages of two persons, it is perfectly possible to say that *neither* is clearly more advantaged than the other.

Indeed, given the motivation behind 'elementary' evaluation and the incompleteness of the well-being ranking of functioning vectors, it is hard to go *beyond* the set-evaluation relations R^* and P^* defined by (7 2) and (7 3) We can proceed further, as with (7.4)–(7 6), only at the cost of some arbitrariness. Various more or less *ad hoc* rules can be considered, but in this monograph I shall not pursue that question any further.

Another type of difficulty with 'elementary' evaluation arises not from wishing to go *beyond* the partial order R^* given by (7 2), but from questioning whether it makes sense to go *so far*. This question can arise from a certain reading of freedom, which suggests that it may not be adequate only to consider what it is that we do succeed in doing. We must also take note of what we *could have* done. (This issue was mentioned in Chapter 2) Consider a case in which the set from which a person can choose shrinks, but still includes the best element from the larger set. Then, in terms of *achievement*, the person's position might be seen as remaining unaffected (if the person does choose the best in each case), but the freedom enjoyed by the person would have shrunk. It is relevant to ask, in this context, how the value of this 'freedom' may be taken into account

One way of dealing with this problem is to make the set-evaluation ranking R^* take note of the *extent* of choice, in addition to the value of the best element (functioning vector) in the capability set. One rather sensible rule of ranking will incorporate 'dominance' in terms of pairwise comparison of the elements of two sets. Let S and T be two sets with at least as many elements in S as in T. Consider now a sub et S' of S such that it has exactly as many members as T. If there is a one-to-one correspondence ($\cdot$) from S' to T, such that every element of S' is at least as good as the corresponding element in T, then S can be thought to be at least as good as T More formally,

$$\begin{aligned} &SR^*T, \quad \text{if and only if} \qquad\qquad (7\ 7)\\ &\exists S' \subseteq S \cdot [\# S' = \# T \text{ and} \\ &\qquad \exists \varrho(\ )\ S' \to T,\ \forall x \in S' : xR^*\varrho(x)]. \end{aligned}$$

It is arguable that this 'dominance set-evaluation' rule is fairly non-controversial. But the required condition for its use is terribly demanding With an incomplete well-being relation R, the coverage of R^* may be particularly limited. Treating R^* given by (7.7) as a basic minimum partial order of capability sets, we can possibly extend it by further articulation, but there is a long way to go.

One specific possibility that might be considered is to have a two-parameter family of representation (x, n) of a capability set reflected by a maximal element x of the set and the number n of members of the set (cardinality of it, formally speaking). If two sets S_1 and S_2 are compared in terms of (x_1, n_1) and (x_2, n_2), then we can consider a rule of the following type:

$$S_1 R^* S_2, \quad \text{if and only if} \quad x_1 R x_2 \quad \text{and} \quad n_1 \geq n_2. \tag{7.8}$$

But the arbitrariness of choosing the *number* of elements as a reflection of the 'extent' of choice makes this a very limited approach, since the 'quality' of the elements must also make a difference Once we decide to go beyond 'dominance set-evaluation', such arbitrariness, in one form or another, is hard to avoid

A rather different approach in dealing with the problem of 'freedom' is to incorporate acts of 'choosing' as among the *doings* and the *beings* in the functioning vector. Then—with the elements of the capability set thus refined—we may stick to 'elementary' evaluation after all.

This way of pursuing the problem would, unfortunately, also lead to difficulties in the characterisation and evaluation of 'choosing',[16] though the problem need not take quite the form it has to take in the judgment of the 'extent' of choice (as, say, in the dominance set-evaluation rule, attempting to take some note of the value of every element in the set from which the choice is to be made) Some broader notion of the exercise of choice—having some really 'substantial' alternatives—may be appropriate to use, without aiming at the refinement that the other route would demand.

To consider acts of substantial choosing as being among the relevant 'functionings', is supportable also from the point of view that the

[16] While 'the freedom to choose' is being valued in this format, it is important to emphasize that this 'freedom' is not being seen here in the rather 'negative' form in which it is often presented in the literature dealing with liberty and non-interference The issue here is the positive ability to choose I have examined this contrast elsewhere [Sen (1982b, 1983b)]

quality of life a person enjoys is not merely a matter of what he or she achieves, but also of what options the person has had the opportunity to choose from. In this view, the 'good life' is partly a life of genuine choice, and not one in which the person is forced into a particular life—however rich it might be in other respects.

I don't think the problem of evaluation is made any simpler by proceeding in this direction (i e., by incorporating aspects of freedom *among* the functionings) But it is nevertheless, I believe, a good move, in better capturing the totality of functionings—the doings and the beings—that make life worthwhile, and which are to be reflected in the person's well-being.

If this route is taken, the gap between well-being and advantage would be made less wide, and indeed even the distinction would be made less sharp But it will still remain possible to ask about the *extent* of the choice offered in the capability set, *after* taking note of the acts of choosing within the functioning vectors themselves.

I have now arrived at a point that reflects the more unclear ends of the approach to well-being and advantage presented in this monograph The approach needs to be pursued a good deal more than has been possible in this short monograph Many issues remain unclear I have tried to outline the problems that seem to me to be quite open. I have presented contrary arguments on different sides, and I do not, for many of these problems, wish to argue strongly for one 'solution' or another.

However, these 'open' matters should not distract attention from other issues on which firm positions have been taken and defended in this monograph These include—*inter alia*—the need to focus on functionings (as opposed to opulence or utility), the centrality of the problem of valuation (as opposed to 'desiring' or 'enjoying'), and the importance of the distinctions between commodities, characteristics, functionings, capabilities, etc., on which much of the analysis of this monograph has rested.

I have tried to argue for looking at the problem of well-being and advantage in a somewhat different perspective from the ones that are typically used It is, of course, no more than a beginning

Appendix A

SOME INTERNATIONAL COMPARISONS

Given the limitations of reliable data, it is not easy to make extensive comparisons of the achievements of different countries in the field of extending capabilities and enhancing functionings. One reason why the data tend to be relatively scarce in this area compared with, say, data underlying GNP and GDP estimates, is the lack of demand for such data. There is no reason why it should not be possible to get more comparative data on, say, morbidity or undernutrition, in different countries. The weaknesses in the *theory* of well-being and living standards have been partly responsible for the underdevelopment of the data base.

Clearly, the important task in the long run is to expand the data base. But this should not prevent us from making use of whatever data may be easily available already In Table A 1, data are presented for five developing countries, viz., India, China, Sri Lanka, Brazil and Mexico; the data are all taken from *World Development Reports* for 1983 and 1984. There is an undue concentration here on matters only of life and death and of education, ignoring many other important capabilities such as prevalence of undernourishment, extent of morbidity, adequacy of basic clothing, ability to be housed and sheltered, etc.; but given the present data base these other comparisons are less easy to make at this moment. The purpose here is only illustrative, anyway.

Some rather interesting patterns can be noticed in the data presented in Table A.1 In terms of GNP per head, India, Sri Lanka and China fall broadly in the same group—the differences between them are not really large—whereas Brazil and Mexico are in a different part of the spectrum of income levels But in terms of life expectancy, infant mortality and child death rate, India stands on its own, whereas China, Sri Lanka, Brazil and Mexico form a different group altogether, with Sri Lanka having the edge over the others In the context, therefore, of one of the most important capabilities—that of long life—India lags behind, whereas Sri Lanka and China

Table A 1
Comparative data on specific achievements of five countries [a]

(1) Country	(2) GNP per head ($) (1982)	(3) Life expectancy (years) (1982)	(4) Infant mortality (per 1,000) (1982)	(5) Child death rate (per 1,000) (1982)	(6) Adult literacy rate (%) (1980)	(7) Higher education ratio (%) (1981)
India	260	55	94	11	36	8
China	310	67	67	7	69	1
Sri Lanka	320	69	32	3	85	3
Brazil	2,240	64	73	8	76	12
Mexico	2,270	65	53	4	83	15

[a]*Sources* *World Development Report 1984* for all columns other than (6), which is taken from *World Development Report 1983*

join a group of countries that are many times richer in terms of GNP per head.

Turning to basic education, using the indicators of adult literacy rates, India once again stands away from the others, which belong to roughly the same group, with Sri Lanka again having the edge In terms, therefore, of life-and-death matters, and elementary education, Sri Lanka and China part India's company (indeed that of all other countries in the same income group)[1] and join or overtake the richer Brazilian and Mexican economies.

The picture is, however, quite different when we look at the universities and higher education. It is now India's turn to part company with China and Sri Lanka and move sharply towards Brazil and Mexico. The elitist character of Indian society and policy, which I have tried to discuss in more general terms elsewhere [Sen (1982c)], is well illustrated by these contrasts In terms of the chance of receiving higher education, the Indian upper and middle classes are not very far behind those in Brazil and Mexico,[2] and way ahead of corresponding groups in China and Sri Lanka (indeed India's higher education ratio is about eight times that of China's) On the other hand, the capabilities of the Indian masses are enormously inferior to those of the masses in China and Sri Lanka in terms of the ability to live long, the ability to avoid mortality during infancy and childhood, the ability to read and write, and the ability to benefit from sustained schooling

In terms of the basic capabilities of survival and education, Sri Lanka and China do stand out In fact, India's record is not really exceptionally bad for the corresponding income group. Its performance is better than the average—certainly no worse Of the thirty countries in the 'low-income' group (other than China, India and Sri Lanka), only three have lower infant mortality and only two higher life expectancy than India (*World Development Report 1984*) What differentiates them is the exceptional performance of China and Sri Lanka The policy issues connected with the remarkable achievements of China and Sri Lanka in respect of basic capabilities have been discussed elsewhere [Sen (1981c)], and I shall not go into that question

[1] *World Development Report 1984* (tables 1 and 23) and *World Development Report 1983* (table 1)

[2] In fact, members of the Indian upper and middle classes may have a better chance in this respect than the upper and middle classes in Brazil and Mexico, since the higher educational students in India come from a relatively smaller proportion of the population than they do in Brazil and Mexico

here Both have pursued—Sri Lanka for a much longer period—public policies geared towards distributing food, public health measures, medical services and school education extremely widely, and there is much evidence that they have reaped as they have sown.[3]

The contrast between China and India arouses a good deal of interest for obvious reasons. The superiority of China's *over-all* performance in expanding the standard of living of the people is decisive.[4] It is important in this context to be clear that the contrast is not really one of commodity opulence, reflected by national income and GNP, since the two countries are fairly close to each other in these respects The point is of considerable policy relevance, since the contrast between China's and India's GNP growth rates has received a lot of attention from economists. It is often taken for granted that China's achievements in the field of raising standard of living is largely due to its rapid economic growth

In fact, there are good grounds for doubting whether China's GNP or GDP growth rates have really been very much higher than those of India There is a bit of a puzzle here. The GNP growth rates are widely accepted to be a lot higher in China than in India The figures given in *World Development Report 1984* bear this out, and are presented here in Table A 2 *World Development Report 1984* also indicates that in 1982, the GNP per head of China was about

[3] Some challenging questions are raised about this diagnosis by Bhalla (1984) He shows that Sri Lanka's progress during 1960–1980 is rather limited [on this see also Sen (1981c)] These issues need further study, but, as Bhalla (1984) notes, the bulk of Sri Lanka's improvement in life expectation and education had taken place *before* 1960 The high level of Sri Lanka's public intervention in health, education and food distribution do go back decades before 1960

[4] China's success is, however, qualified by the fact that it has not been able to prevent the occurrence of famine, indeed, there has been a substantial one, during 1959–1961, with a great many millions dying, as has been acknowledged only recently [see Zhu Zhengzhi (1980), Sun Yefang (1981), People's Republic of China (1981), Fen Yang County Communist Party Committee (1980) and Bernstein (1983)] I have argued elsewhere [Sen (1983a)] that India has succeeded in avoiding famines largely because of the active role of a relatively free press and powerful opposition parties in forcing the government's hand in undertaking relief operations and causing adjustment of policies There was no corresponding pressure in China during the 1959–1961 famine However, while the pressure of newspapers and opposition parties have helped to guarantee in India the avoidance of acute starvation and famine, they have not provided a strong force against regular, endemic malnutrition, which is rampant in India and relatively rare in China Dramatic deprivations engage the attention of the media and political opposition, and become electoral issues, in a way that the quiet continuation of persistent, orderly hunger does not On this contrast see Sen (1982c 1983a) also Ashton et al (1984)

19 per cent higher than that of India. If we extrapolate backwards at the identified growth rates of GNP per head for the period 1960-1982, we find that China's GNP per head would have to be, in per capita terms, only a little over half that of India at the beginning of the sixties! This is scarcely credible, since all estimates suggest that China's income per head was comparable with—possibly even a little higher than—India's when systematic planning started in the two countries in the fifties.[5]

It is very likely that China's growth rate has been higher than India's, but not radically higher. China has remained a poor country in terms of GNP and has not decisively parted company with India in this respect. Where it has parted company is precisely in the matter of functionings and living standard, which must not be confused with GNP per head. The capabilities of the Chinese masses are now immensely superior in many vital respects than those of the Indian masses. They live a good deal longer, have much safer infancy and childhood, can deal more effectively with illness and disease, can mostly read and write, and so on. The 'economic distance' between China and India is much more telling in terms of living standard and functionings than in terms of GNP and commodities.[6] In the context of policy debates in which the need for a high growth rate of GNP is assigned a truly hallowed position, this basic point about criteria and progress is important to bear in mind.

[5] Kuznets (1966, pp. 360–361) estimates the same GNP per capita for China and India and a 'product per capita' 20 per cent *higher* in China in 1958.

[6] Note that this calls for a more fundamental departure than correcting GNP figures for distributional differences [see Sen (1976b, 1979a)].

Table A 2
Estimated growth rates and corresponding relative incomes China and India.[a]

(1)	(2) 1960–1982 growth rate of GNP per head (%) Estimated by WDR 1984	(3) 1960 GNP per head as a ratio of 1982 GNP per head corresponding to WDR growth estimates	(4) 1982 GNP per head Estimated by WDR 1984 ($)	(5) Alleged 1960 GNP per head Estimated from WDR growth estimates ($)
China	5.0	0.342	310	106
India	1.3	0.753	260	196
China/India ratio			1.19	0.54

[a] *Procedure and sources* The calculations here are all based on data as presented by *World Development Report 1984* (WDR). Growth rates of GNP per head are taken from WDR (table 1) estimates. Using these compound growth rates, the estimated ratios of 1960 GNP per head to 1982 GNP per head have been calculated [column (3)]. The 1982 GNP per head [column (4)] are taken from WDR (table 1). The 'alleged 1960 GNP per head' is deduced from columns (3) and (4).

Appendix B

WELL-BEING, FUNCTIONINGS AND SEX BIAS

Indian Illustrations

The existence and extent of sex differential in India has begun to receive attention in recent years.[1] One of the difficulties in dealing with this problem arises from the conceptual framework to be used in judging the well-being of men vis-a-vis women. Many social scientists have discussed the way South Asian families—especially rural ones—are dominated by thinking in terms of group well-being, so that the notion of personal welfare has appeared to many to be an inappropriate one to use in this context.[2] This approach, if taken literally, precludes the possibility of examining sex differential in terms of well-being, since no contrast between the well-being of men and women can be drawn out of the compound notion of 'family well-being'.

Certainly, utility-based models of well-being geared to individual desires and individual pleasures and pains are hard to apply when these mental magnitudes are so closely related to the state and the status of 'the family' On the other hand, if well-being is judged by functionings, then contrasts between the positions of men and women can be drawn and empirically studied This is what this appendix is aimed at.[3]

The *perception* of relative needs of different members of the family may be closely related to social influences, e g., there may be magnification of the needs of the head of the household, or underplaying of the needs of women. The point may be illustrated with an interesting example of perception bias in a post-famine health survey in India In Singur, near Calcutta, in 1944—the year after the Bengal Famine

[1] See, for example, Boserup (1970), Bardhan (1974, 1982), Jain (1975), Gopalan (1979), Mitra (1980), Miller (1981), Padmanabha (1981), Banerjee (1982), Jain and Chand (1982), Rosenzweig and Schultz (1982), Agarwal (1984) and UNICEF (1984), among other contributions

[2] See Das and Nicholas (1981) for a clear and helpful presentation of the main arguments

[3] This appendix draws heavily on Sen (1981b), Kynch and Sen (1983), and Sen and Sengupta (1983)

of 1943—the All-India Institute of Hygiene and Public Health carried out a health survey which included questions on the perception of one's own health, in addition to medical examination by doctors [see Lal and Seal (1949)]. There were many widows and widowers in the population surveyed In answer to the question as to whether they were 'ill' or in 'indifferent' health, 48.5 per cent of the widow*ers* (men, that is) confided to being thus afflicted, while the corresponding proportion of widows was merely 2.5 per cent. The contrast is even more interesting when we look at the response to the question as to whether one was in 'indifferent' health, leaving out the category of being 'ill' for which some clear-cut medical criteria do exist. 45.6 per cent of the widowers confessed to having the perception of being in indifferent health In contrast, the proportion of the widows who had that perception was—it is reported—exactly zero!

In dealing with within-family distribution, the perception of reality—including illusions about it—must be seen to be an important part of reality But to achieve a more significant assessment of well-being of men and women, we have to look elsewhere

An alternative approach can be based on examining the *commodity consumption* of males and females, e.g , food intakes. These data are hard to get since individual eating and other consumption activities are not easy to observe with precision Also, the conceptual framework of food requirements (e.g., 'calorie intakes required') is extremely shaky (as was discussed in Chapter 2). The relationship of, say, calories to health is contingent on a number of factors, e g , metabolic rates, parasitic diseases and pregnancy. The usual 'standards' used [e g , of the FAO/WHO Expert Committee (1973)] also reflect some fairly straightforward biases (e.g , under-estimation of the workload of women), and these biases have recently received a good deal of attention

A better approach is to look at the 'functionings' themselves, which are after all the things directly involved in the well-being of a person. It is this approach that we use in this appendix, in line with the analysis presented in the monograph However, the concern here will be with some selected functionings and not with the entire list; nor with a weighted over-all value.[4]

[4] Some of the functionings, e g , leading a healthy life, can possibly be related to crude indices such as 'weight for age' This works less problematically for small children than for adults In the case of adults, the problem of the fixing of a 'standard' becomes serious when comparing adult men and adult women. There have been interesting studies in that line too [see for example Rao (1984), indicating a greater

B.1. Declining female-male ratio

One of the more remarkable demographic features of India is the steady decline of what is called the 'sex ratio', i.e , the ratio of female to male population (henceforth, FMR). This ratio, which has been below unity throughout this century, has fallen from 0.972 at the turn of the century to 0.935 in the last census in 1981. Table B.1 presents the values of the ratio in the various censuses; see also Figure B.1.[5]

Table B 1
Female-Male Ratio (FMR) 1901-1981.[a]

Census year	FMR
1901	0 972
1911	0 964
1921	0 955
1931	0 950
1941	0 945
1951	0 946
1961	0 941
1971	0 930
1981	0 935

[a]*Source*· Padmanabha (1981, pp 35, 61), *Provisional Population Totals*, from the *Census of India*

The lowness of the famale-make ratio in India cannot be explained by differences in the sex-ratio at birth, as Pravin Visaria (1961) has convincingly demonstrated The real issue would seem to be differential mortality. India is one of the exceptional countries in the world in which the life expectancy at birth is lower for the female than for the male The age-specific death rates are substantially higher for the female than for the male up to the age of mid-thirties, see Table B.2.

deprivation of the Indian rural male vis-a-vis the Indian rural female] But the comparisons are very sensitive to the *extent* by which the 'standard male' is supposed to *weigh more than* the 'standard female' See also Vaidyanathan (1984)

[5] It might appear from these figures that the decline of the FMR has at last been halted, but it has been suggested that the 1971 figure had seriously underestimated the FMR, and that the apparent rise during 1971–1981 is not real [See Dyson (1982)] Certainly the reported decline in the FMR during 1961–1971 was very sharp—a great deal sharper than in any previous decade Whether or not the 1971 figure underestimated the FMR, regarding the long-term trend over the decades, there is little reason to be confident that the days of the declining FMR are over See also Visaria (1961), Cassen (1978), Mitra (1980), and Visaria and Visaria (1981)

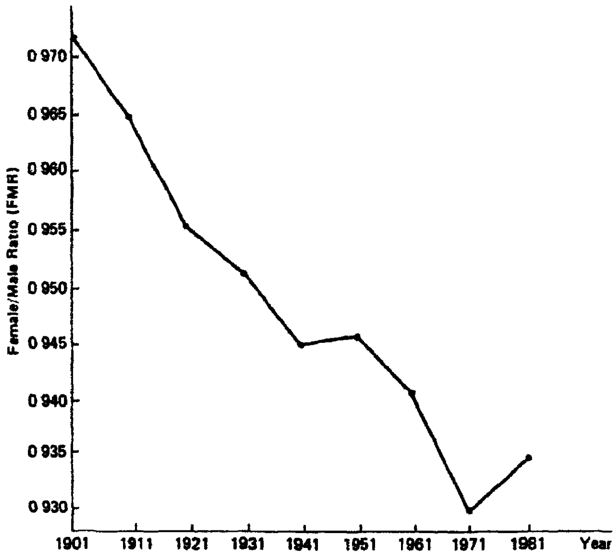


Figure B 1 Female-Male Ratio (FMR) 1901-1981

Table B 2
Ratio of age-specific female to male death rates (1976–1978) [a]

Age group (years)	Rural	Urban
0– 4	1 17	1 04
5– 9	1 31	1 59
10–14	1 04	1 40
15–19	1 42	1 57
20–24	1 65	1 45
25–29	1 47	1.27
30–34	1 09	1 07
35–39	0 93	0 89
40–44	0 74	0 82
45–49	0 68	0 64
50–54	0.69	0 69
55–59	0.63	0 75
60–64	0 75	0 76
65–69	0 83	0 77
70+	0 82	0 92
All ages	1 06	1 03

[a]*Source* Padmanabha (1981,table 5) The figures are derived from the results of the 'Sample Registration System'

B.2. *Neglect of the famale child*

The Registrar General and Census Commissioner for India, Mr. P. Padmanabha (1981), has suggested the following explanations of the higher mortality among females and of the declining female-male ratio: (1) 'preference for male children resulting in neglect of female babies', (2) 'certain types of mortality are selective between males and females', and (3) 'high maternal mobility'. However, Padmanabha (1981, p. 35) argued that 'there is little evidence to support the view that there is a deliberate neglect of female babies despite the fact that there may be a preference for male children'.

As far as the last is concerned, there is indeed some direct evidence of comparative neglect of female babies and children, especially in north India.[6] The extent of discrimination can be particularly pronounced during hard times

For example, the incidence of malnutrition—a failure of a crucial functioning—of female children was substantially greater than male-children malnutrition in the economic crisis prevailing in many parts of rural West Bengal following the floods of 1978. Table B 3 presents ratios of the incidence of female malnutrition over the incidence of male malnutrition for each year of age between one year and six, for three categories of malnutrition, viz., Grade III (severe), Grades II and III (moderate to severe) and Grades I, II and III (slight to severe).

While the Registrar General (1981, p. 35) is clearly correct that neglect of female children 'is an area of uncertainty and requires further investigation', there is some straightforward evidence of comparative neglect of female children, especially in times of distress.

Another case study comes from Sen and Sengupta (1983), involving a nutritional survey of the children of two villages in rural West Bengal, viz , Kuchli and Sahajapur, consisting of 126 and 205 households respectively Altogether 236 children, all below five years of age, were studied—90 from Kuchli and 146 from Sahajapur (covering all the children who were there at the time of the survey) Kuchli has a better history of land reform, and only 18 per cent of the children came from landless families, whereas that percentage was 60 in Sahajapur

The general level of malnutrition in both the villages was found to

[6] See Sen (1981b), and Kynch and Sen (1983) See also Miller (1981) and Bardhan (1982)

Table B 3
Ratio of female-children malnutrition rate to male-children malnutrition rate
(post 1978-floods in rural West Bengal)[a]

Age group (months)	Grades I–III (slight to severe malnutrition)	Grades II–III (moderate to severe malnutrition)	Grade III (severe malnutrition)
0–12	1 26	1 30	1 59
13–24	1.03	.1 34	1 44
25–36	1 07	1 35	1 77
37–48	1 05	1 60	1 75
49–60	1 05	1 21	1 17
61–72	0 99	2 17	2 51
Total (0–72)	1 07	1 40	1 59

[a]*Source*· Sen (1981b) The data were obtained from UNICEF (1981)

be distressingly high, but was worse in Sahajapur, the village with little land reform In addition, in both villages girls were systematically more undernourished at every level The levels of undernourishment were determined by comparing the actual weights with the expected weights in relation to age. Using standard 'Weight Curves from Birth to Five Years of Age' used in this part of the country, the children were placed in various categories in line with standard medical advice given to public health staff falling below Curve I (i e , below the level of 'average well-fed children'), below Curve II ('undernourished and require supplementary feeding'), below Curve III ('severely malnourished', 'consult the doctor and follow his advice'), and Curve IV ('will have to be hospitalized for treatment')

Table B 4 presents the picture of undernutrition of boys and girls, separately, in the two villages, with the 'undernourishment index' being derived from putting a weight of 1 on those below Curve I but above or on Curve II ('slightly undernourished'), a weight of 2 on those below Curve II but on or above Curve III ('moderately undernourished'), a weight of 3 on those below Curve III but on or above Curve IV ('severely undernourished'), and a weight of 4 on those below Curve IV ('disastrously undernourished'); the index is then normalized between 0 and 100

It is remarkable that the village with a lower level of malnutrition of children in general, viz., Kuchli, has much more sex bias than the more undernourished village of Sahajapur. In fact, looking at Table B 4, one would get the impression that the performance of Kuchli girls is

Table B 4
Percentage of undernourishment of children below 5, by sex.

	Below I	Below II	Below III	Below IV	Under-nourishment index
Sahajapur					
Boys	94	71	39	6	53
Girls	92	73	44	9	55
Kuchli					
Boys	79	52	19	7	39
Girls	90	75	48	8	55

just about the same as that of Sahajapur girls. The entire gain of Kuchli over Sahajapur in terms of lower average malnutrition of children as well as the greater sex difference in Kuchli both seem to be due to the superior nutritional status of the Kuchli boys vis-a-vis Sahajapur boys.

While Table B.4 presents the assessment of health of children in relation to exogenously given nutritional standards, it is also possible to assess the relative performance of different groups in terms of the internal growth dynamics of the respective groups The relationship between weight and age of children is well approximated by a power curve (even though it is obviously faulty for age 0 and just after birth). The following equation was fitted for the different groups, with w standing for weight in kgs. and a for age in months, and k and p two coefficients to be estimated:

$$w = ka^p.$$

The results for the four groups—Sahajapur boys, Sahajapur girls, Kuchli boys and Kuchli girls—are presented in Table B 5

One way of checking the significance of the difference between boys and girls is to combine the data for all children and then use a dummy variable for boys This produces a significant (at 1 per cent level) dummy for boys vis-a-vis girls when applied either to the constant k, or to the power coefficient p, in the case of Kuchli, but neither in the case of Sahajapur Interestingly enough, the combined data of the two villages also produced a significant dummy addition for boys when done either for the constant or for the power coefficient The adjustment gives somewhat better results when the

Table B 5
Age-weight growth curves. Power fit. $w = ka^p$

Group	No	Estimated k	Estimated p	R^2
Sahajapur				
Boys	80	2 21	0 399146	0 76
Girls	66	2 31	0 376124	0 78
Kuchli				
Boys	42	2 27	0.414923	0 73
Girls	48	2 32	0.373543	0 63

dummy variable for boys is applied to the power coeffıcent.

The results of power coefficient adjustments are given in Table B.6, applied in the form,

$$\log w = \log k + p \log a + b \log a \text{ (dummy for boy).}$$

A similar picture is obtained by comparing boys and girls in terms of the 'ordinal' criterion of 'dominance', e g , a boy 'wins' over a girl if he is *both* younger *and* weighs more than the girl, and similarly the other way around. In Sahajapur, while boys 'win' in this comparison over girls about 30 per cent more often than girls do, in Kuchli boys win *3 3 times* more often

Table B 6
(t-statistics in parentheses)

Village	No	Estimated $\log k$	Estimated p	Estimated b	R^2	F-statistic
Sahajapur	146	0 817374 (14 69)	0 382468 (20 19)	0 009995 (1 04)	0 78	247 83
Kuchli	90	0 834599 (8 55)	0 375766 (12 53)	0 034900 (2 47)	0 68	91 24
Both	236	0 822185 (16 55)	0.380226 (23 52)	0 019056 (2 38)	0 74	326 31

It can be easily seen that in each village boys grow faster than girls, but while the growth difference is relatively mild in Sahajapur, it is more pronounced in Kuchli. In both villages the fitted curves suggest a greater weight for girls than for boys for the very early

ages, with the growth curve of boys crossing that of girls from below, and with the gap widening monotonically thereafter. The point of cross-over is around six months in Sahajapur and just below two months in Kuchli The slight advantage of girls over boys at very early age seems to correspond to the well-known phenomenon of lower neo-natal mortality of female infants vis-a-vis male infants, followed (in India) by systematically higher infant mortality for females over males beyond the neo-natal period.

It should be observed that also in terms of the growth curves the performance of Sahajapur girls is very close to that of Kuchli girls, while Kuchli boys do very much better than Sahajapur boys.[7] If the contrast between Sahajapur and Kuchli could be interpreted as reflecting the impact of land reform and other general economic advantages of the population of Kuchli vis-a-vis that of Sahajapur, then it would be natural to conclude that these relative advantages have benefited mainly the male children, leaving the female children more or less where they were.[8]

In Sen and Sengupta (1983) the causal influences on the differential patterns have been examined in terms of land ownership, occupation structure, feeding programmes, educational background, job opportunities for boys and girls, and so on.[9]

B.3. Lowness versus decline of the female-male ratio

Coming back to the female-male ratio the lowness of that ratio has to be distinguished from the declining *trend* of the ratio. The declining trend in India is particularly odd, since one would expect

[7] Another way of comparing the extent of sex bias is to examine the relative performance of boys and girls *within* the same household Of the 105 households in Sahajapur, 18 have children below five of both sexes, and in 9 of these households female children have inferior nutritional status than male children, whereas the opposite is the case in 5 such 'shared' households In Kuchli, out of 63 households, 15 are 'shared', with female inferiority in 8 households and superiority in 2 Thus, Kuchli's excess of female-deprived households is also much greater than Sahajapur's

[8] However, while there is something in that reading, the picture is more complex, since there are other differences between Kuchli and Sahajapur, including a programme of nutritional intervention in Sahajapur Such a programme clearly would have the effect of reducing the gap between boys and girls since the programme of public feeding does not discriminate against girls in the way in which family arrangements clearly do On this see Sen and Sengupta (1983)

[9] See also Rosenzweig and Schultz (1982) for some general incentive considerations related to sex bias See also Khan (1984)

the bias against the female to diminish rather than increase with economic progress. In fact, the declining trend is contrary to a common demographic supposition, noted for example by Preston (1976, p. 121): 'It is clear that the frequency of systematically higher female mortality ... declines monotonically as mortality levels improve.'[10] In India the over-all decline in mortality rates—from 42.6 per thousand in 1901–1911 to 14.5 per thousand in 1976–1978—has gone hand in hand with a decline in the female-male ratio and a lower female life expectancy *since* 1921 In the first decade of this century, the life expectancy of both the male and the female were shockingly low, but the female life expectancy was relatively higher to wit, 23 3 years compared with 22.6 years for the male. Both these figures are much higher now, but the female life expectancy of 50 years in 1976–1977 is short of the male figure of 51 years.[11]

Indeed, with economic and social progress, as the *absolute* positions of both Indian men and Indian women have improved, the relative position of Indian women seems to have fallen behind If we judge well-being by the capability to live long, women's well-being has fallen vis-a-vis men's, even though absolutely both have increased substantially.

B.4. Urbanization and sex differential

It is worth noting in this context that the age-specific death rates are higher for the female up to the mid-thirties (in age) not merely in the rural areas, but also in urban areas in India (see Table B.2 above). Indeed, for the wide age spectrum between 5 years and 20 years, the percentage excess of female mortality is *higher* in urban areas than in rural While the ratio of urban population to total population has gone up from 11 per cent to 24 per cent between 1901 and 1981, this growing urbanization of India has not really acted as a powerful force against differential female mortality.

In fact, even the urban medical care facilities seem to be used more by the male than by the female and the differential is particularly large for the children.[12] However, it is difficult to translate the picture of hospital admissions and treatment into that of need

[10] See, however, Johansson (1983)

[11] See Padmanabha (1982, table 2) *World Development Report 1984* (table 23) gives the Indian life expectancy figures for the male and the female respectively as 55 and 54 years for 1982

[12] See Miller (1981, pp 100–102) and the literature cited there

Table B.7
Hospital treatment per unit of adult mortality in Bombay
Sex differential.[a]

	Hospital 1					
	Ratio of hospital inpatient admissions to hospital deaths			Ratio of in- and out-patients to city deaths		
	Men	Women	Difference	Men	Women	Difference
1955	16.09	11.81	4.28	13.46	6 66	6.80
1956	16.30	11 25	5.05	13 27	6 79	6.48
1957	17.53	11.71	5 82	11.95	6.22	5.73
1958	17 95	13 72	4 23	13 48	7.34	6.14
1959	16 60	11.78	4.82	14 63	8.24	6 39
1960	15 92	11 05	4.87	13 06	7.35	5 71
1961	16 60	12 04	4 56	11.62	8.36	3 26
1962	15.73	11 78	3 95	14.98	8.89	6.09
1963	17.09	14.80	2.29	14 65	9 11	5.54
1964	16 86	14 38	2 48	13 34	8 47	4 87
1965	16 23	13 57	2 66	12.61	8.04	4 57
1966	14 78	12.30	2 48	12 37	8 49	3 87
1967	14 69	12 46	2 23	10 96	8 74	2 22
1968	15 45	11.84	3 61	12 66	9.90	2 76
1969	13 33	11 26	2 07	11.34	8 86	2 48
1970	13.26	11 36	1 90	11 02	8 49	2 53
1971	12.33	10 37	1 96	10 85	8 10	2 75
1972	13 03	10.81	2.22	11 22	8 19	3 03
1973	12 00	10 57	1 43	10 20	7 91	2.29
1974	11.93	12.89	-0 96	9.59	6.91	2.68
1975	12 62	10.33	2 29	–[b]	–[b]	–[b]
1978	11 55	10.46	1.09	–[b]	–[b]	–[b]

[a]*Source* Kynch and Sen (1983). Information obtained from the *Administrative Reports of the Municipal Commissioner for Greater Bombay* (annual publication). Hospital data taken from Reports on King Edward VII Memorial Hospital, and Bai Yamunabai L Nair Charitable Hospital

fulfilment, since the needs for admission and treatment can, arguably, vary between the sexes. One way of avoiding this problem is to look at the ratio of hospital treatment to deaths reflecting the incidence of medical treatment in hospitals per case of death.

Table B.7 presents—for non-gynaecological and non-obstetric cases—the ratios of (1) in-patient hospital treatment to deaths in hospital, and (2) in-patient plus outpatient hospital treatments to deaths in the city, for two of the major hospitals in Bombay.[13] While

[13] King Edward VII Memorial Hospital and Seth Gorhendas Sunderdas Medical

Table B 7 (continued)

	Hospital 2					
	Ratio of hospital inpatient admissions to hospital deaths			Ratio of in- and out-patients to city deaths		
	Men	Women	Difference	Men	Women	Difference
1955	16 01	11 71	4 30	4 87	2.56	2 31
1956	14 23	11 50	2 73	5 00	2 91	2 09
1957	13 80	11 51	2 29	4 56	2.62	1 94
1958	13 34	12 27	1 07	5 20	3 05	2 15
1959	14 43	13 05	1 38	5 66	3 31	2 35
1960	15 62	15 54	0 08	5 44	3 08	2.36
1961	17 97	14 04	3 93	5 50	3.14	2 36
1962	18 15	13 97	4 18	5 73	3.20	2.53
1963	17 99	15 91	2 08	5 71	2 27	2 44
1964	17 79	15 63	2 16	5 28	3 01	2.28
1965	18 91	13 00	5 91	4 52	2 36	2.16
1966	16 95	15 27	1 68	4 47	2 38	2.09
1967	16 89	15 99	0 90	4 34	2 79	1 55
1968	18 18	16 70	1 48	4 84	3 06	1 78
1969	15 43	17 10	-1 67	4 88	3 01	1 87
1970	14 44	14 22	0 22	5 55	3 90	1 65
1971	16 72	17 51	-0 79	6 34	3 49	1.97
1972	15 35	15 96	-0 61	6 52	5 00	1 51
1973	16 76	17 43	-0 67	6 13	4 53	1 59
1974	15 80	15 62	0 18	-[b]	-[b]	-[b]
1975	16 48	17 08	-0 60	-[b]	-[b]	-[b]
1978	16 10	16 66	0 56	-[b]	-[b]	-[b]

Deaths from statements in the report of the executive Health Officer Outpatients are new cases plus casualties City deaths are all deaths registered in Greater Bombay including suburbs and extended suburbs, aged over 15 years

[b]Data on deaths not available

the excess of the male treatment ratio over the female ratio has declined over the last two decades, the male ratio still remains consistently higher than the female ratio.

A similar picture of sex-based differential can be observed in the case of children as well, with boys having a consistently higher treatment ratio than girls as shown in Table B.8 In fact, in *percentage*

College, and Bai Yamunabai L Nair Charitable Hospital and T N M College The data have been gathered together from the annual *Administrative Reports of the Municipal Commissioner for Greater Bombay* See Kynch and Sen (1983)

Table B 8
Hospital treatment per unit of mortality of children in Bombay
Sex differential [a]

	Hospital I					
	Ratio of hospital inpatient admissions to hospital deaths			Ratio of in- and out-patients to city deaths		
	Male children	Female children	Difference	Male children	Female children	Difference
1955	6 93	5 71	1 23	3 18	1 93	1 25
1956	7 01	6 14	0 87	3 59	2 35	1 24
1957	7 47	7 07	0 40	3 61	2 18	1 43
1958	8 03	6 70	1 33	4 18	2 40	1 79
1959	6 54	6 14	0 40	4 90	2 88	2 03
1960	6 41	6 02	0 40	4 33	2 58	1 75
1961	8 92	7 64	1 28	4 54	2 89	1 67
1962	8 10	7 12	0 98	5 64	3 46	2 18
1963	8 28	6 50	1.78	5 59	3 39	2 20
1964	8 67	7 09	1 58	5 10	3 33	1 76
1965	7.59	5 60	1 99	4 24	2 81	1 43
1966	9 24	7 07	2 17	5 39	3 29	2 10
1967	8 21	7 06	1 15	4 05	2 51	1 54
1968	9 11	7 86	1 25	5 90	3 91	1 99
1969	9 06	7 83	1 23	5 33	3 65	1 68
1970	9 81	8 19	1 63	5 27	3 56	1 71
1971	10 09	8 21	1 88	5 06	3.63	1 43
1972	8.36	7.11	1 25	5 12	3 39	1 74
1973	9 49	8 41	1 08	4 75	3.21	1 52
1974	8 73	7 62	1 11	4 39	2 97	1 43
1975	9 41	8 10	1 32	–[b]	–[b]	–[b]
1978	8 03	7 53	0 50	–[b]	–[b]	–[b]

[a]*Source* Kynch and Sen (1983, table 4) Treatment and death data relate to children under 15 years of age

terms the differential is typically more pronounced in the case of children than with adults. And, needless to say, the complications introduced by the elimination of gynaecological and obstetric cases from the data are absent in the sex-based contrasts among children

While these contrasts of treatment ratios are based on data from Bombay only, the picture may have wider interest Bombay is regarded—with some justification—as the most 'advanced' city in India. In fact, female mortality rate in the city of Bombay seems to have fallen behind the male mortality rate in the last decade[14]—a

[14] See reports of Executive Health Officer in *Administrative Reports to the Municipal Commissioner for Greater Bombay* for 1970 onwards

Table B 8 (continued)

	Hospital 2					
	Ratio of hospital inpatient admissions to hospital deaths			Ratio of in- and out-patients to city deaths		
	Male children	Female children	Difference	Male children	Female children	Difference
1955	6.74	5.43	1 31	1 71	1.51	0 20
1956	6 63	6 48	0 16	1 94	1 58	0.35
1957	7 07	5 85	1 22	1.80	1.45	0.35
1958	6 62	6 17	0 45	1 91	1.37	0 54
1959	7 94	6 25	1.69	2 17	1.64	0 53
1960	6 85	7 08	-0 23	2 03	1 46	0 57
1961	8 84	7 10	1.74	2 03	1 41	0 62
1962	8 17	7 28	0 89	2 38	1 80	0 59
1963	10 55	8 18	2 37	2 42	1 72	0 69
1964	10 81	8 36	2 45	2 18	1 96	0 23
1965	10 81	9 27	1 55	1 61	1 13	0 48
1966	11 15	10 29	0 86	1 43	1 33	0 10
1967	10 08	10 88	-0 79	1 74	1 15	0 59
1968	12 76	9 56	3 19	2 32	1 68	0 64
1969	11 26	9 98	1 28	2 43	1 77	0 67
1970	12 54	10 09	2 44	3 06	2 16	0 90
1971	16 20	11 20	4 99	3 46	2 44	1 02
1972	16 18	12 60	3 58	3.86	2 71	1 15
1973	17 00	13 34	3 56	3 58	2 70	0 88
1974	15 43	13 00	2 44	-[b]	-[b]	-[b]
1975	15 42	12 62	2 80	-[b]	-[b]	-[b]
1978	15 35	11 83	3 52	-[b]	-[b]	-[b]

[b]Data on deaths not available

reversal that has not been observed in many Indian cities. The persistent shortfall of the female treatment ratio even in the city of Bombay is, thus, of some particular interest, especially in the case of children.

In another study [Sen (1981b)], dealing with Calcutta, the pattern of sex differential in terms of health conditions was studied, using data from the Calcutta Metropolitan Development Authority Some of the empirical results are presented without elaborate commentary here, in Tables B.9, B.10 and B.11.

Table B 9 shows the picture of excess female morbidity in Calcutta and the adjacent urban and rural areas, and this seems to apply con-

Table B 9
Incidence of poor health conditions of usual male and female residents of the CMDA area; age in years (last birthday), (percentage of each age-sex group).[a]

Health	0–14		15–25		26–45		46–60		61+		All ages	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Total Calcutta												
Ill	1	3	2	2	1	2	3	4	4	8	1.6	2 8
Ill and indifferent	30	30	13	25	18	37	32	47	58	67	23.6	34.4
Howrah and municipal towns												
Ill	3	2	2	1	1	2	3	2	6	5	2.0	2.0
Ill and indifferent	35	34	23	33	23	47	47	57	78	73	31.4	41.0
Other towns and villages												
Ill	2	1	1	0	1	2	2	0	15	8	1 9	1 5
Ill and indifferent	20	20	13	15	14	35	32	47	65	64	19 9	27 0
Total CMDA area												
Ill	2	2	2	1	1	2	3	2	5	9	1.9	2 2
Ill and indifferent	29	28	18	26	19	40	39	49	64	70	26.1	34 7

[a] *Source* Sen (1981b)

Table B 10
Incidence of poor health conditions of usual male and female residents in the improved and unimproved bustees (slums) in CMDA, age in years (last birthday), (percentage of each age-sex group) [a]

Health	0-14		15-25		26-45		46-60		61+		All ages	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Improved bustees												
Ill	3	5	-	-	1	3	-	3	-	18	1 4	4 0
Ill and indifferent	22	27	17	18	24	56	40	67	44	53	24 4	38 6
Unimproved bustees												
Ill	1	1	2	1	-	4	6	3	-	-	1 1	1.6
Ill and indifferent	36	38	13	21	21	52	37	61	65	80	27.5	41 1

[a] *Source* Sen (1981b)

Appendix B

Table B 11

Incidence of poor health conditions of usual male and female residents of the CMDA area by per capita household expenditure groups; (percentage of each sex-expenditure group).[a]

	Per capita monthly expenditure group (Rs. per month)							
	0–54		55–128		129 and above		Total	
	Male	Female	Male	Female	Male	Female	Male	Female
Ill	2.4	2 5	1 8	2.2	1.6	2.0	1.9	2 2
Ill and indifferent	30.6	34.6	26.5	37.1	21.7	28 4	26.0	34.7

[a]*Source*: Sen (1981b).

sistently to every age group. In these studies more care was taken to avoid 'perception bias' of the kind that was observed in the Singur survey discussed earlier, and more objective medical criteria were also used. This was helped also by the politicization of the Calcutta population, and greater recognition of female identity, in the three and a half decades between 1944 and 1979.

Table B. 10 presents a similar contrast for the slums of Calcutta and its neighbourhood.

Table B.11 relates the health conditions not merely to sex but also to income, and it is found that while health conditions do improve in general with income, the sex differential against the female applies to each income group.

The inferior position of Indian women in terms of some of the most elementary functionings and capabilities seem to be confirmed by these studies. While these kinds of studies cannot be seen as definitive, there is enough evidence of 'functioning gaps' of Indian women here to regard this issue as an important one for studies of the Indian economy and society.

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